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# Health Building Note 8

## Rehabilitation – accommodation for physiotherapy, occupational therapy and speech therapy

NHS Estates
An Executive Agency of the Department of Health

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## Rehabilitation – accommodation for physiotherapy, occupational therapy and speech therapy

LONDON: HMSO

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# About this publication

The Health Building Note series is intended to give advice on the briefing and design implications of Departmental policy.

These Notes are prepared in consultation with representatives of the National Health Service and appropriate professional bodies.

Health Building Notes are aimed at multi-disciplinary teams engaged in:

- Designing new buildings
- Adapting or extending existing buildings

Throughout the series, particular attention is paid to the relationship between the design of a given department and its subsequent management. Since this equation will have important implications for capital and running costs, alternative solutions are sometimes proposed. The intention is to give the reader informed guidance on which to base design decisions.

**Health Building Note 8**

HBN 8 focuses on District General Hospital accommodation requirements for:

- Physiotherapy
- Hydrotherapy
- Occupational therapy
- Speech therapy
- Consultant medical staff

Since these services seek to rehabilitate patients physically, psychologically and socially, this Note recommends and assumes that therapists and other specialist staff will be closely involved from the earliest stages of any project.

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# 1.0 Scope of Health Building Note 8

## Introduction

**1.1** This Health Building Note (HBN) gives detailed guidance on the planning and design of accommodation to meet the needs of patients who require rehabilitation by means of physiotherapy, occupational therapy and speech therapy. Whilst this guidance has been developed in the context of a District General Hospital (DGH), it is not the intention to restrict its use to that situation alone.

**1.2** A number of policy and organisational changes are being developed which may influence the planning and delivery of rehabilitation services. These include:

a. the implementation of the National Health Service and Community Care Act 1990;

b. the integration of the services of the Disablement Services Authority within the NHS by 1991.

**1.3** The guidance is intended to facilitate good management and achieve value for money in capital and revenue terms. Every care has been taken to ensure that the guidance and recommendations for this accommodation are as economical as possible without detriment to clinical standards. New technology and its influence on clinical practices may bring it considerable implications for space in rehabilitation departments.

**1.4** The Note replaces the guidance given in:

a. Hospital Building Note No 8 – 'Physiotherapy Department' 1961;

b. Health Building Note No 9 – 'Occupational Therapy Department' 1962;

c. A Design Guide – 'Department of Rehabilitation', 1974.

## Inclusions

**1.5** The guidance in this Note focuses on the accommodation needed at a DGH for:

a. physiotherapy,

b. hydrotherapy;

c. occupational therapy;

d. speech therapy;

e. consultant medical staff.

The accommodation at item (e) is optional. Local circumstances will determine whether this is better located within the rehabilitation or out-patient complex.

## Exclusions

**1.6** This Note does not contain guidance concerning the accommodation for rehabilitation services provided at:

a. local authority day centres;

b. schools for children with special needs;

c. the patient's own home;

d. Disabled Living Centres:

e. centres providing artificial limbs and wheelchair services – Disablement Service Centres operated by the Disablement Services Authority (formerly known as Artificial Limb and Appliance Centres), at the time of publication.

In addition electromyography services are not included.

**1.7** This Note makes no specific recommendations in respect of accommodation for social workers, psychologists and other professional groups concerned with rehabilitation. However health authorities may wish to incorporate this accommodation into their deliberations as part of their overall consideration of service provision.

**1.8** Other guidance about rehabilitation is contained in:

a. Health Building Note 37 – 'Hospital Accommodation for Elderly People' 1981;

b. Health Building Note 23 – 'Hospital Accommodation for Children' (does not include speech therapy), 1984;

c. Health Building Note 35 – 'Accommodation for people with acute mental illness', 1988;

d. Health Building Note 4 –'Adult Acute Wards', 1990.

## Capricode

**1.9** Capricode is the mandatory procedural framework governing the inception, planning, processing and control of individual health building schemes. The aim of Capricode is to promote a consistent and streamlined approach to capital development that achieves best use of

resources through the selection and construction of relevant and cost effective schemes that open on time and within budget. It identifies the main activities and provides a framework for delegation with effective management and the proper accounting for expenditure and performance. (See 'Capricode Health Building Procedures' issued to Health Authorities with HN(86)32.)

## Cost allowances

**1.10** The cost allowances associated with this Note were promulgated in an Annex to Circular HN(90)11 issued by the Department of Health with the Advance Copy of the HBN in May 1990. The areas in the Schedules in the Cost Chapter are those used in preparing the cost allowances. They may be used as a guide in preliminary planning, but must under no circumstances be treated as a maximum or as an entitlement. This is dealt with more fully in Chapter 7.

## Equipment

**1.11** Equipment is categorised into four groups, as follows:

Group 1: items (including engineering terminal outlets) supplied and fixed within the terms of the building contract;

Group 2: items which have space and/or building construction and/or engineering service requirements and are fixed within the terms of the building contract but supplied under arrangements separate from the building contract;

Group 3: as Group 2 but supplied and fixed (or placed in position) under arrangements separate from the building contract;

Group 4: items supplied under arrangements separate from the building contract, possibly with storage implications but otherwise having no effect on space or engineering service requirements.

The Equipment Cost Allowance Guide (ECAG) specifies a sum of money for the items in Groups 2, 3 and 4, related to the sizes of department for which capital cost allowances are given.

# 2.0 General service considerations

## Purpose and objectives

**2.1** The objectives of the services covered by this guidance are the rehabilitation of patients to the optimum physical, psychological and social levels attainable. Members of different professional groups will need to work as a multi-disciplinary team.

## Service strategy and factors influencing planning

**2.2** Policy and organisational changes being developed which may influence future rehabilitation services are given in paragraph 1.2.

**2.3** Local circumstances will determine the range of options to be considered in planning new or upgraded rehabilitation services. These might include a comprehensive Rehabilitation and Disablement Services Centre within a health authority in which some NHS, local authority social services and other agencies continue to offer a coordinated service for people with disabilities and their carers. An essential part of such a development would be the physiotherapy, occupational therapy and speech therapy departments with which this Note is primarily concerned.

**2.4** There is a wide range of rehabilitation services provided by districts within the National Health Service. Many local matters will have a bearing on the provision of rehabilitation services, eg policy for the treatment of patients in locations outside a DGH; existing facilities including those provided by local authorities and local education authorities, and overall strategic plans for these and other services. It is therefore essential for planners to examine all these factors before taking decisions about the type of provision necessary.

**2.5** It is imperative that physiotherapists, occupational therapists, speech therapists, doctors and all others who are able to provide expert input about requirements are involved from the very earliest stages in all planning discussions. They should be consulted at all stages of the development.

## Future developments in treatment/ clinical preferences affecting working practice

**2.6** Changes in technology and clinical practices may have considerable implications for space in rehabilitation departments. The developing use of computers for record keeping and for therapeutic use are examples. This equipment will require suitable areas where it can be used, kept safe and secure.

## Organisation and staffing relationships

**2.7** At present most health authorities have a district physiotherapist, district occupational therapist and district speech therapist responsible for planning, organising and monitoring their respective services on a district basis. This is to ensure balanced development of services to all client groups, and the most effective and economic use of therapists, facilities and equipment both in the hospital and in the community. Therapists are members of multi-disciplinary teams together with medical and nursing staff, psychologists and social workers. These teams extend their activities from hospital to the community. This requires therapists to contact other professionals, relatives, teachers in schools and units for children with disabilities, staff in the employment rehabilitation field, the primary health care team, local authority social services departments, and other support services.

## Physiotherapy

**2.8** A physiotherapy service assesses, deals with and prevents problems of mobility and function using natural approaches. These are based essentially on movement, manual therapy and other modalities such as various forms of electrotherapy, cryotherapy and hydrotherapy. NHS hospitals offering acute services may require a 24-hour, 7 days a week physiotherapy service for in-patients.

## Occupational therapy

**2.9** The purpose of occupational therapy is to improve patients' function and to minimise handicaps through specific use of selected activities, techniques, environment and equipment adaptations. The occupational therapist uses work, domestic and leisure activities to help patients

overcome disabling physical and psychological conditions; to achieve personal independence in daily living activities and regain competence in leisure and work related tasks. The occupational therapy department must provide adequate facilities to undertake this range of treatment activities, which are tackled through a holistic problem solving approach.

## Speech therapy

**2.10** The purpose of speech therapy is to assess, diagnose and treat communication problems. Patients may be seen individually or in a group setting. If the development or restoration of expressive speech is unlikely alternative methods of communication may be introduced. Wherever possible the parent, partner or some other family member will be involved in the rehabilitation and the patient's dysfunction explained. It follows that family counselling plays an important part in the clinical management of the patient.

## Adolescents and children

**2.11** Although it may be necessary for adolescents and older children to be treated in the adult department, a separate treatment area, within the children's accommodation, should be provided for younger and multi-handicapped children. It should be large enough to accommodate parents as well as staff, and be adequately equipped. However, it is for individual health authorities to determine their precise requirements at local level, within the overall accommodation provided (see paragraphs 3.14, 4.23 and 4.24).

## Factors affecting demand

**2.12** Where there is a national or regional specialty unit, for example neurosurgery or spinal lesions or a Disablement Services Centre, this will have significant implications for rehabilitation services related space and other requirements. Demand on central facilities will depend on the location of these specialty units and whether provision has been made for separate facilities.

**2.13** It is usual for the demand for therapy services to vary according to local practice and established referral patterns. Certain specialities, such as orthopaedics, neurology and care of the elderly can make heavy demands on these services.

**2.14** Local arrangements for general practitioners to refer patients direct to rehabilitation departments will vary. This will have implications for the balance between accommodation provided centrally and elsewhere.

**2.15** Although the increasing tendency towards treatment being provided in locations other than hospitals may affect the deployment of therapists it should not significantly influence the space requirements in rehabilitation departments of District General Hospitals. This is because there is an optimum space requirement for essential equipment and a minimum space below which active treatment cannot take place.

**2.16** Occupational therapists employed by local authority social services departments provide a service which can facilitate early discharge of disabled patients. It is invaluable for local authority occupational therapists to have access to the more sophisticated equipment to try out with patients before a decision is made to order and install such items in a patient's own home.

**2.17** An integral part of the work of an occupational therapist is the assessment of patients' work potential. The type of employment and training programmes available in the locality may influence the activity, equipment and space requirements.

## Assessment of requirements

**2.18** There has been considerable difficulty in the past in providing a suitable formula by which the rehabilitation requirements of a health authority, in building terms, can be assessed. There is no readily applicable formula for establishing the size of a rehabilitation service.

**2.19** In calculating accommodation needs health authorities should examine and assess in detail their own individual situation covering such aspects as:

a. local demography;

b. the potential of existing and future services (including the location and type of local authority services);

c. the type of area (eg rural, heavy industrial);

d. staff availability and flexibility;

e. existing statistics and future trends;

f. the existence of Regional Units eg burns, spinal injuries, neurosurgery;

g. training needs;

h. transport facilities.

Bed numbers alone are insufficient for determining needs.

**2.20** Observation and experience have shown, however, that there are limits to the number of patients who can be treated effectively at the same time in either physiotherapy or occupational therapy sections. The recommendations in

this Note are based on two sizes – small and large size departments.

**2.21** In respect of physiotherapy, the smaller size is considered to meet the needs of a maximum of 40 patients in the department, excluding hydrotherapy, at any one time, and the larger a maximum of 60 patients. In respect of occupational therapy the figures are 19 and 33 respectively, and for speech therapy 9 and 18 respectively. The large and small size departments are *examples* of the functional sizes of the department which can effectively accommodate the maximum number of patients and staff at any one time; see Figures 1 and 2 for basic accommodation list and functional grouping.

**2.22** Function sizes
(except hydrotherapy)

| Maximum number at any time | Size of department large | small |
|---|---|---|
| **Physiotherapy** | | |
| Patients (total) | 60 | 40 |
| Patients in cubicles and rooms | 16 | 10 |
| Patients in large activity area | 22 | 18 |
| Patients in small activity area | 10 | 6 |
| Patients elsewhere in the department | 12 | 6 |
| Personnel (of whom more than half may work away from the physiotherapy section, eg on wards) | 26 | 16 |
| **Occupational therapy** | | |
| Patients (total) | 33 | 19 |
| Patients in light activities area | 15 | 8 |
| Patients in heavy activities area | 10 | 5 |
| Patients in Activities of Daily Living | 5 | 4 |
| Patients elsewhere in the department | 3 | 2 |
| Personnel (of whom more than half may work away from the OT Section, eg on wards or on home visits) | 13 | 8 |
| **Speech therapy** | | |
| Patients (total) | 18 | 9 |
| Patients in group room | 10 | 8 |
| Patients in individual treatment rooms | 6 | 1 |
| Patients elsewhere in the department | 2 | – |
| Personnel (of whom some may work elsewhere in the hospital) | 8 | 3 |

**2.23** One hydrotherapy pool should usually be sufficient in each district. The guidance in this Note covers one size of pool which is considered to be the minimum to adequately meet the needs of a district, irrespective of the overall size of the rehabilitation department.

## Transport

**2.24** Out-patient attendances for therapy will be affected by the availability of public, hospital, voluntary or private transport, and in some cases the cost and distance to be travelled.

**2.25** Transport is a very important planning factor in the location of rehabilitation accommodation. Adequate consideration must be given to this at the earliest opportunity.

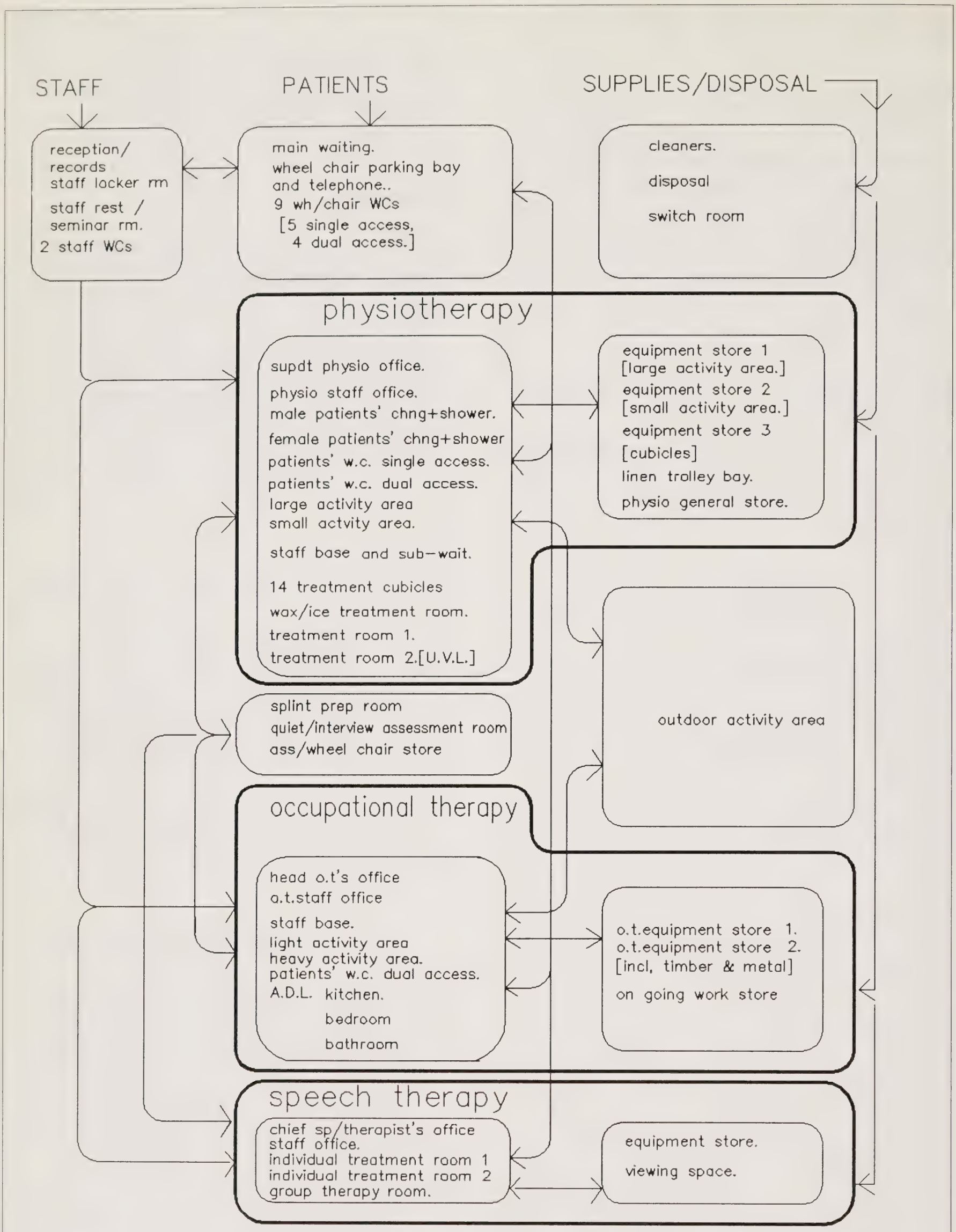


Figure 1 REHABILITATION DEPARTMENT. [larger size.]
basic accommodation—list of spaces & functional grouping.
[ For maximum personnel & patient numbers at one time refer to para 2.22 ]

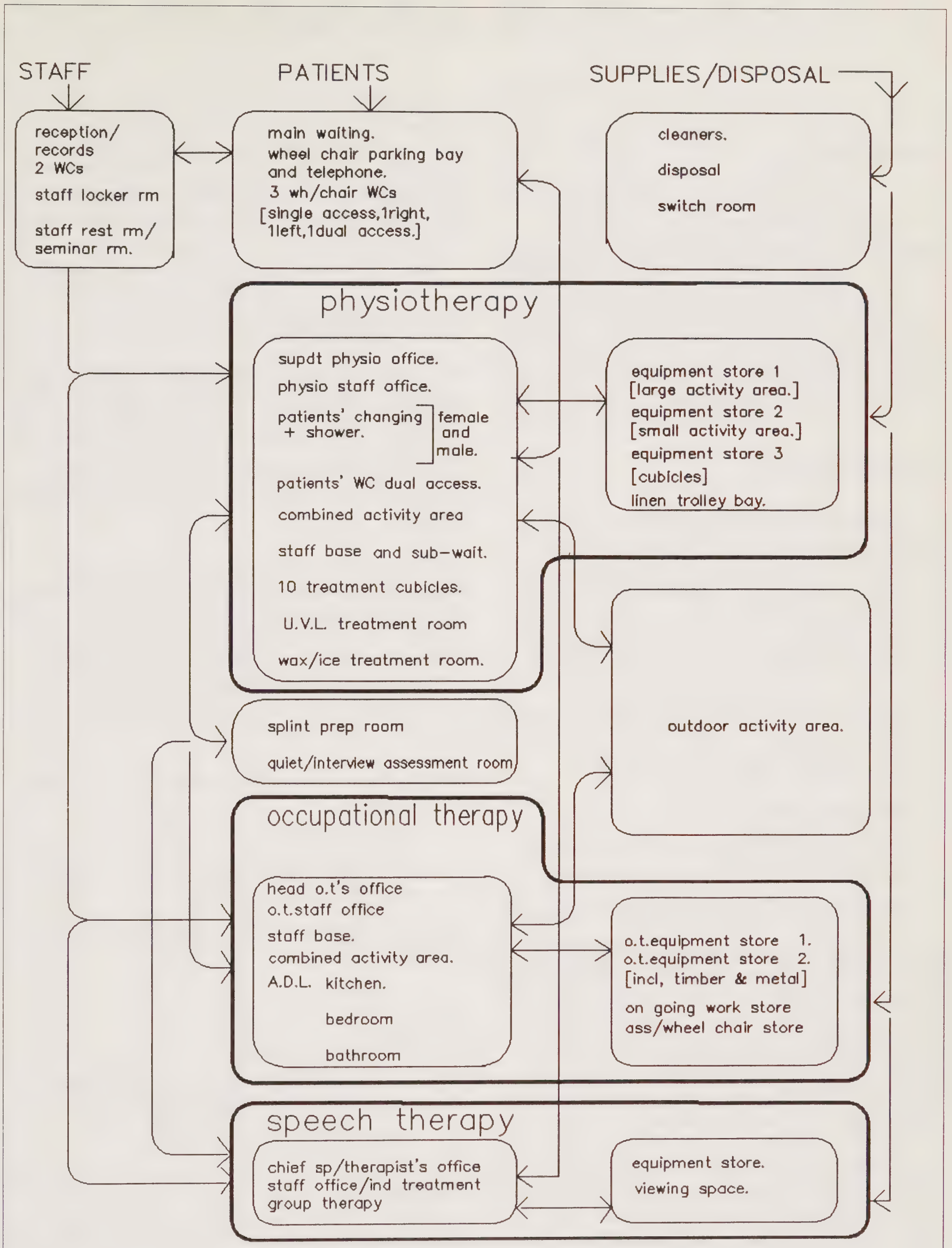


Figure 2 REHABILITATION DEPARTMENT. [small size.]
basic accommodation—list of spaces & functional grouping.
[ For maximum personnel & patient numbers at one time refer to para 2.22 ]

# 3.0 General functional and design requirements

## Introduction

**3.1** This Chapter provides general information on a range of topics which should be taken into account when designing accommodation for the services outlined in Chapter 2. Environmental and other topics are considered in Chapter 5. Detailed guidance on engineering services is in Chapter 6 and cost information in Chapter 7. Full details of activities, equipment, environmental conditions, finishes of walls, floors and ceilings, are given in the Activity Data A-Sheets (see Chapter 8).

## Disabled people

**3.2** It is essential to ensure that suitable access and facilities are provided for disabled people who have problems of mobility or orientation. This includes wheelchair users, those who for any reason have difficulty in walking and those with a sensory handicap such as a visual or hearing impairment. Authorities are reminded of the need to comply with the provisions of:

The Chronically Sick and Disabled Persons Act 1970;

The Chronically Sick and Disabled Persons (Amendment) Act 1976;

The Disabled Persons Act 1981;

The Disabled Persons (Services, Consultation and Representation) Act 1986;

The Building (Disabled People) Regulations 1987.

Attention is also drawn to BS5810: 1979 Access for the Disabled to Buildings (under review). One of the effects of the 1981 Act is to apply this British Standard to premises covered by the 1970 Act, which includes those open to the public. Practical guidance for complying with The Building (Disabled People) Regulations is issued by the Department of the Environment under Approved Document 'M': Access for the Disabled.

Project teams are encouraged to refer to Heath Building Note 40 – 'Common Activity Spaces Volume 4 Designing for Disabled People'. This gives guidance and a set of ergonomic Data Sheets on access, space and equipment relating to disabled people in health buildings.

Project teams may wish to consult local representatives of disabled people with regard to the planning of this department.

The hand set of pay phones should be fitted with an inductive coupler to assist people using a hearing aid (see paragraph 4.6 and 6.108). In addition at least one payphone should be mounted at a height suitable for a person in a wheelchair.

## Planning and design

**3.3** The accommodation should convey a feeling of warmth and reassurance. It should have a good standard of daylight and, if possible, a pleasant outlook.

**3.4** Finishes should have warm colours and a variety of textures. The use of carpet finishes is recommended where suitable.

**3.5** The design of individual spaces should take into account the size of the area with respect to ceiling height; larger spaces such as the group activity area may, in order to allow for some activities, need ceilings higher than the general run of ceiling heights elsewhere. Stable portable screens can be used with advantage to sub-divide large spaces according to needs and conditions, possibly varying from day to day.

**3.6** The design must satisfy the following practical needs:

a. good ventilation without draughts;

b. overall good observation but taking into account areas of privacy;

c. adequate space to allow occasional re-positioning of equipment.

## Location

**3.7** In view of the physical disabilities of many patients, the department should be located at ground level.

## Access

**3.8** An external entrance will be required in a scheme which cannot be integrated with an existing hospital. In any development where the nearest hospital entrance is a lengthy distance away a separate external entrance will be needed (see also paragraph 7.3). Guidance on such an entrance is given in HBN51– Supplement 1 'Miscellaneous Spaces in a District General Hospital'. However where

there is no direct external entrance there must be easy access for patients from the main external entrances being used, bearing in mind the needs of those using walking aids and wheelchairs and the necessity to avoid congestion. Reasonable ease of access is also necessary for those patients attending from other parts of the hospital, as determined by Whole Hospital policies.

**3.9** The external entrance to be used by patients should contain an easy approach for vehicles and should be associated with the usual facilities provided at the entrance eg porters, wheelchairs and wheelchair parking. Some parking should be available for disabled drivers which should be adequate to enable a patient to be transferred to/from a wheelchair, and to/from a car. It is an advantage to have external access to the occupational therapy section for delivery of materials for use in the work areas. Traffic circulation, including access, parking of vehicles and ambulances are dealt with in more detail in HBN45 – 'External Works for Health Buildings' (in preparation).

**3.10** External access is required for vehicles and patients on foot, many of whom may have disabilities. This access should be direct or via the main hospital entrance, or a hospital street. Internal access is required for in-patients on foot, or on beds or trolleys, or in wheelchairs.

## Planning relationships and organisation

**3.11** Figure 3 indicates relationships to other hospital departments. Treatment is provided for both in- and out-patients. Some treatments for in-patients will take place in the wards but these and other in-patients may also require treatment in the main accommodation. Reasonable access from wards is therefore necessary.

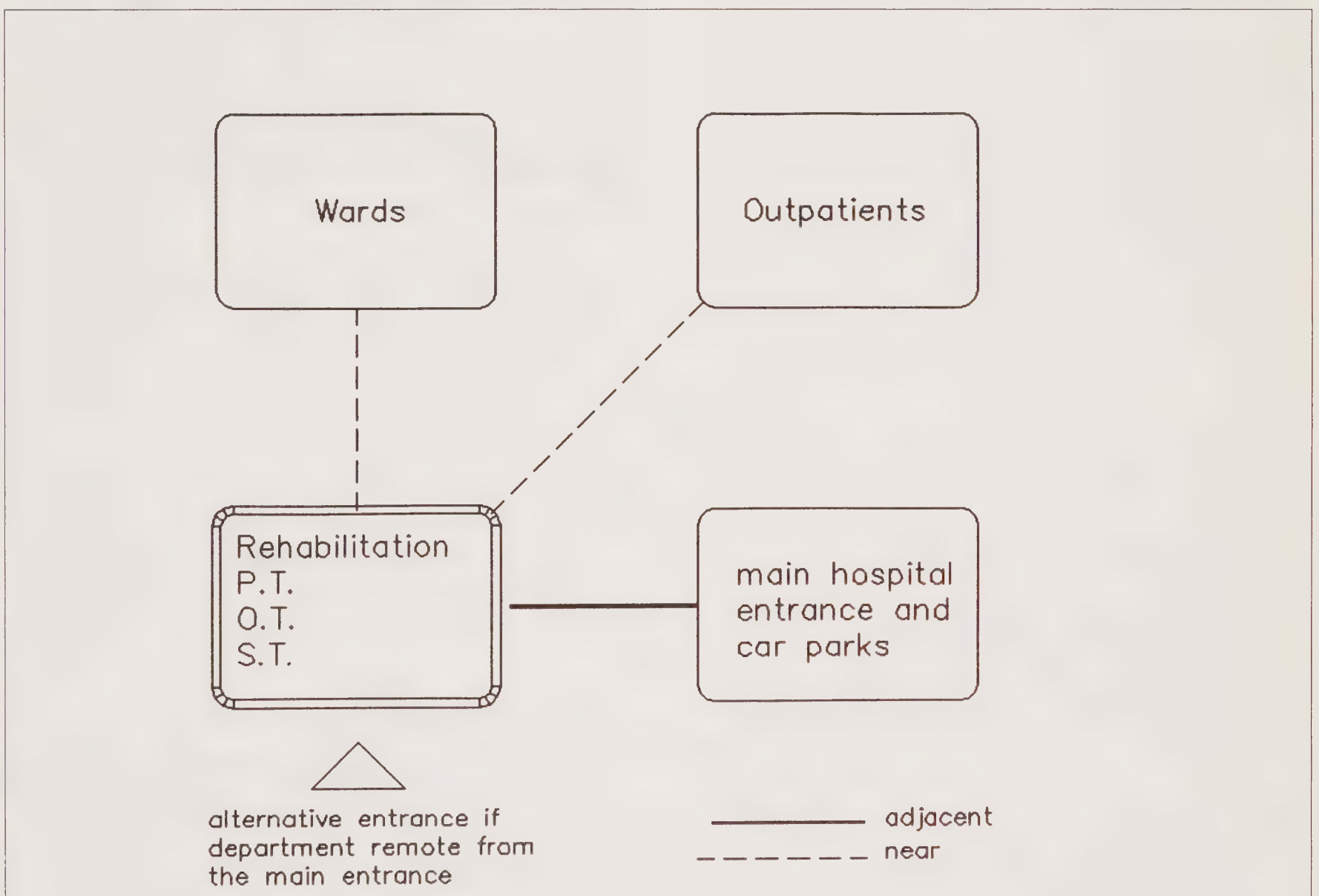


Figure 3 diagram of planning relationships within hospital

**3.12** It is essential that the functional and physical planning is co-ordinated with that of services and facilities for children, elderly people, people with a mental illness, elderly mentally ill people, and those with mental handicap so that the specific needs of these client groups are not overlooked.

**3.13** The adult client groups referred to in paragraph 3.12 may use the facilities of their appropriate day services for their mainstream care. However, if a person in these client groups has an additional functional problem not specific to their condition, it may be necessary to arrange for attendance as an out-patient at the rehabilitation department to receive the treatment service specifically available there.

**3.14** The treatment of younger children should preferably take place in the accommodation for children within the hospital. HBN23 – 'Hospital Accommodation for Children' describes this provision. Where children of any age are likely to attend the department(s) it is not only important that appropriate space is available for their treatment needs to be met, but also that the facilities are so planned that there is no undue disturbance for other patients whilst there are children receiving treatment. Where rehabilitation facilities are lacking in any children's accommodation or because of other circumstances, it may be necessary to provide additional facilities for this purpose. Information is given about the extent of additional accommodation which may be necessary, as an optional extra, in paragraphs 4.23 and 4.24.

**3.15** Correct planning relationships are necessary between the various elements of accommodation and Figure 4 indicates suggested internal relationships within the overall unit. The layout must be based on predictable patterns of patient and staff movement and patient activity. These matters are discussed in more detail in paragraphs 3.19 to 3.36. The waiting area should be convenient for all sections (see also paragraph 4.6). The physiotherapy and occupational therapy areas should be adjacent.

**3.16** A small proportion of patients will receive treatment in the hydrotherapy suite including those with more severe disabilities who may be wheelchair users or arrive on trolleys. It is necessary to ensure that there is direct and easy access from the departmental entrance and waiting area to the hydrotherapy suite. It is essential for the suite to be related directly to physiotherapy. Its situation within the overall accommodation should be such that it can operate separately from and without interference with the activities of the other elements. Very few patients will have only hydrotherapy when they attend for treatment so it is desirable that facilities for hydrotherapy are within a fully integrated complex.

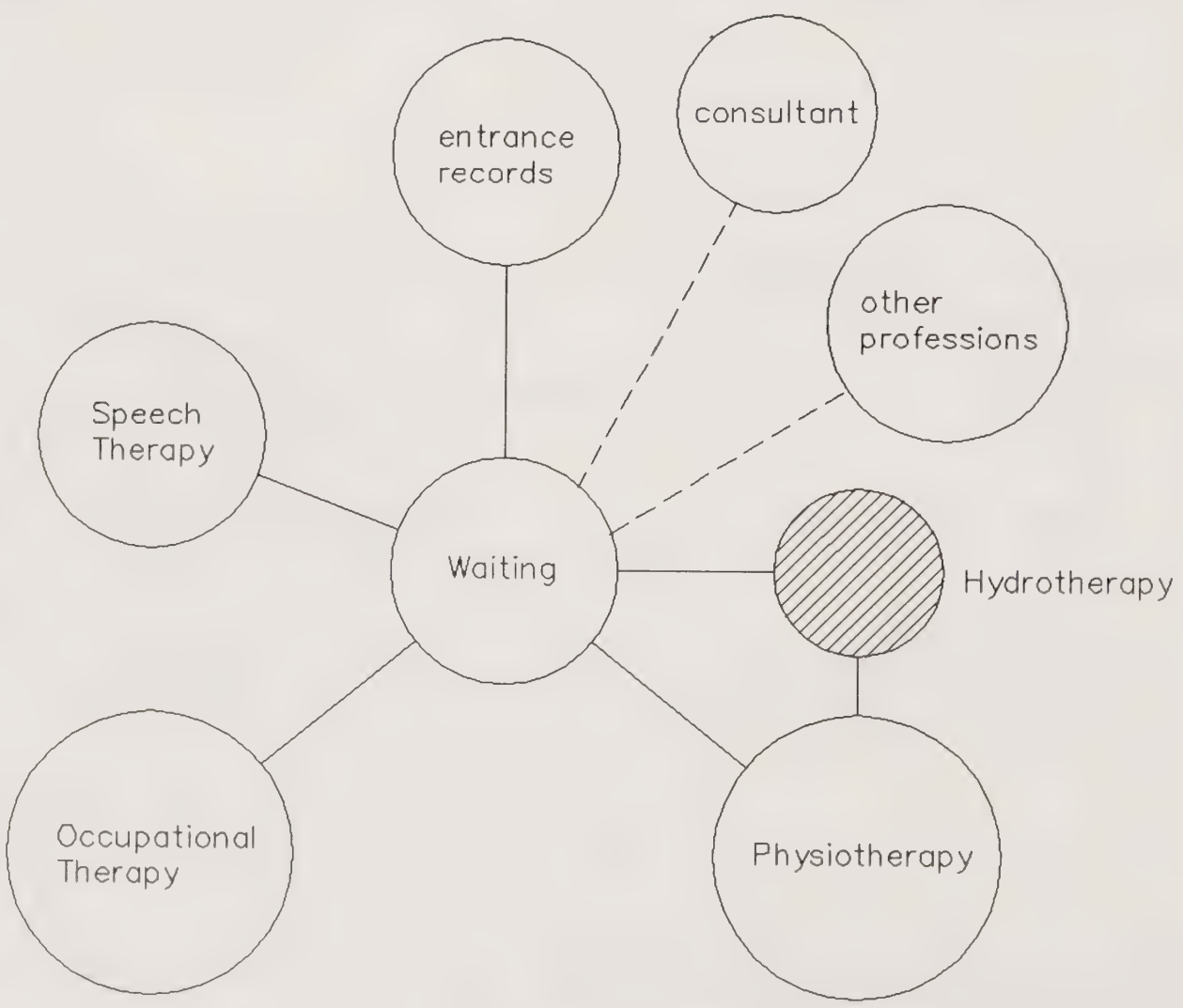


Figure 4 diagram of planning relationships within department

## Amputees

**3.17** Amputees will not normally attend for the supply and fitting of their prostheses, but the attendance of some amputees for treatment can be expected. The rehabilitation needs of all upper and lower limb amputees should be co-ordinated between the hospital facilities and those of the artificial limb service (Disablement Services Centre).

## Medical and other relevant professional groups who do not have appropriate accommodation elsewhere

**3.18** Where a medical consultant with a special interest in rehabilitation is in post, it may be appropriate to locate this office accommodation within the department, if the consultant does not have an office elsewhere in the hospital. Similar considerations might apply to other professional groups.

## Patient/Staff movement and activities

**3.19** The design and layout of the overall accommodation must be based upon predictable patterns of patient movement into and within it, must relate to the varied activities likely to be carried out in each section and must take account of staff requirements, particularly observation of patients.

**3.20** Some patients will be in wheelchairs, others will be ambulant, some of whom will be using walking aids. They will arrive for treatment from outside and within the hospital. Patients attending from within the hospital should be adequately clothed if they have to transfer to or move through other hospital departments or be taken outdoors.

**3.21** The reception counter, where patients normally report and make appointments, should be adjacent to the departmental entrance. Some records of patients will be held at the reception point and be collected by therapists as required. The reception point can serve as a base for any portering requirements. The time taken to treat patients will vary with some patients staying a maximum of a full day. The reception area acts as the communication centre for the departments and must always be manned when the accommodation is in use as all the patient call and alarm systems will be located here.

**3.22** Therapists are becoming increasingly involved in teaching patients and carers self-management. Such activities include group education and demonstration of procedures. In-service training of staff and other educational activities will take place within the department (see also HBN42 – 'Accommodation for Education and Training').

## Safety

**3.23** Differences in floor levels should be avoided. Single steps can be very dangerous. Any such dangers should be clearly highlighted.

**3.24** It must be possible to switch off all electrically operated therapy equipment in an area very quickly in an emergency. All such equipment must be guarded and maintained in accordance with Health and Safety requirements. The use of portable appliances operating at mains voltage for cleaning the surrounds of the hydrotherapy pool will require special precautions to protect the operatives against the danger of electric shock (see paragraphs 6.96 and 6.97 for details).

**3.25** In areas allocated to diathermy treatment, the use of exposed metal close to the patient or applicator should be avoided as it can distort the radiated field pattern and cause localised overheating which can burn the patient. Additionally precautions will be necessary when:

a. patients with an implanted pacemaker use this accommodation (see HN (Hazard) (80) 10);
b. nerve or muscle stimulators are used in this accommodation (see paragraph 3.29).

## Electro-magnetic interference

**3.26** Some electrotherapy equipment in common use in the physiotherapy section utilises substantial amounts of electromagnetic energy at radio frequency (typically 27.12 M Hz). A proportion of this energy radiates into the surrounding space and can affect other electronic equipment situated nearby. This is inevitable and usually no blame should be attached to the electrotherapy equipment.

**3.27** Consideration should be given at the planning stage to the need for and location of such electrotherapy equipment in relation to other items of equipment likely to be susceptible to electromagnetic interference which may be located both within and outside the physiotherapy section.

**3.28** Common problems can include incorrect output from nerve and muscle simulators used in physiotherapy, malfunction of monitoring equipment, paging systems and some modern telephones and incorrect data from microprocessor-based analytical or computer equipment.

**3.29** No purchasing standards are yet available covering the susceptibility of electronic equipment to electromagnetic interference although the International Electrotechnical Commission Technical Committee 62, which is responsible for standards for medical electrical equipment, has started work on the subject of electromagnetic compatibility. More detailed background information and guidance on some steps which purchasers and users can already take to alleviate problems is given in Safety Information Bulletin No 33 (SIB(87)21). Specific guidance on how to minimise the effects of radio frequency interference on nerve and muscle stimulators, including recommended modifications to some older models of Interferential Stimulators which may still be in service, is given in Safety Information Bulletin No 20(SIB(85)4).

## Layout

**3.30** General planning principles for the layout of the accommodation should be based on the following basic requirements:

a. single entry point for patients to the main treatment areas;

b. central waiting space and sub-waiting space as appropriate;

c. ease of supervision;

d. open spaces but screened as necessary;

e. avoidance of corridors and doors as far as practicable;

f. compactness.

**3.31** The waiting space associated with the entrance should be adequate and conveniently positioned for access to the facilities in the department. The splint room, quiet assessment/interview room, and WCs should be conveniently situated for all users. The physiotherapy staff base and any sub-waiting area should be centrally located within the physiotherapy treatment areas allowing for good supervision of patients. The large and small physiotherapy activity areas should be adjacent. The cubicles of the individual treatment area should be easily accessible from the staff base and associated with the other treatment areas.

**3.32** The location of the hydrotherapy suite will be influenced by the need to be associated with the physiotherapy section. The mechanical services ie ventilation, water treatment, heating and filtration are more extensive here than elsewhere and the need for an economic arrangement of plant, pipework and ducting must be considered (see Chapter 6).

**3.33** The location of storage areas is particularly important. Stores require easy access from the various treatment and exercise areas but also need to be placed conveniently for the delivery of materials (see paragraphs 4.22, 4.43, 4.68, 4.81 and 4.101).

**3.34** Occupational therapy requires accommodation for a wide range of activities, some of which will require discrete space. This will include an Activities of Daily Living (ADL) section and an outdoor activities area. The position of the occupational therapists' office should be as central as possible to facilitate good oversight of the activities areas. The general activities area should connect directly with the ADL section.

**3.35** The location of the speech therapy treatment area needs to take into account acoustic requirements, ie away from sources of noise.

## Therapy records

**3.36** Current and recent records will normally be kept in the relevant section of the department. Longer term storage will be in accordance with Whole Hospital policies (see HBN 47 – 'Health Records Department').

## Catering and Domestic Services

**3.37** No facilities for the preparation of meals for patients and escorts are provided within the department. However reasonable access is required to refreshment facilities for those who may be staying for some time or may have special dietary requirements. The kitchen in the Activities of Daily Living is part of the treatment facilities and is not to be considered in the above context (see also paragraph 4.88 et seq).

## Supplies

**3.38** The department will be supplied in accordance with the whole hospital policy.

# PHYSIOTHERAPY

**3.39** The physiotherapy service in a DGH requires a range of accommodation and equipment. Within the rehabilitation department unit ample clear space is required for individual and group activities to be carried out in safe and uninterupted environment. This space is needed for two distinct activity areas for both in- and out-patients on short-term, more vigorous rehabilitation programmes and those on longer-term management

programmes. In a "small size department" a single large activity space is provided. Stable space dividers or selective timetabling of use should be considered to ensure that effective and safe use is made of this space by both user groups.

**3.40** Curtained cubicles or rooms are required for individual treatments in privacy. Each individual treatment cubicle/room must allow adequate space for the patient and the therapist, with any accompanying equipment, to work on both sides and at each end of the treatment couch. Some electrotherapy equipment requires dedicated cubicle accommodation and some treatments require additional attention to privacy. Some treatment modalities, such as ice, hot packs and wax require additional preparation space.

**3.41** Physiotherapists may be involved in sterile procedures, for example in the treatment of pressure sores or unhealed wounds. Appropriate storage for sterile packs and the disposal of the material will, therefore, need to be included. Control of infection and Health and Safety at Work policies should be observed.

**3.42** Some patients will need to change for treatment. They will require the privacy of changing accommodation for this. Others may be directed into individual treatment cubicles or into the activity areas. Sometimes patients may need to wait in a sub-waiting area prior to treatment. During treatment patients may need to move from one area to another. Adequate circulation space is needed for the movement of patients in wheelchairs, on bed trolleys or using walking aids. Some toilets must be suitable for disabled people.

**3.43** Internal relationships within the physiotherapy section are set out in Figure 5. These will be examined and described in more detail in the paragraphs on layout and those describing individual spaces (see paragraphs 3.30 and 4.30 to 4.44).

**3.44** Physiotherapy staff require a base which provides good observation of the treatment areas.

**3.45** Some treatments will require overhead and wall-mounted meshes. Treatments include those:

a. which involve a treatment couch or chair plus an item of mobile equipment such as that used for various forms of electrotherapy;

b. which require fixed or particularly large items of equipment such as some of that used for ultra-violet irradiation or traction;

c. which require privacy because of their nature eg respiratory therapy or ultra-violet irradiation:

d. which require preparation in a utility area eg hot packs, ice, wax, splints, dressings;

e. which may involve a couch but no equipment, such as some manual or manipulative techniques;

f. which require patient and therapist to sit with a small table between them; such as some upper limb treatments.

**3.46** Some treatments will take place in the activity areas. These will involve individual or groups of patients and will require space and/or a range of exercise equipment both mobile and fixed. Examples of equipment include:

floor and high mats
chairs
wallbars
mirrors
games equipment /apparatus
exercise ergometers
steps
stools
tilt tables
weight systems
isokinetic equipment
tables
parallel bars
wobble boards

Small items of equipment such as those for hand exercises will also be required.

**3.47** Many of these treatments will involve patients in considerable activity. Supervised competitive activities or exercises may be a feature of group work. Patients can change from individual to group exercises. Areas require good observation by staff to ensure proper control and safety for all concerned.

## HYDROTHERAPY

**3.48** Some patients will require hydrotherapy. A hydrotherapy suite is expensive to provide and maintain and it has significant staffing implications. Health authorities should consider in detail all the implications of installing a hydrotherapy suite to ensure, as far as they are able, that they are making the most effective allocation and use of resources.

**3.49** The requirements for the hydrotherapy suite are dealt with in detail in paragraph 4.45 et seq. The suite should be a self-contained, functional unit which is part of the hospital physiotherapy facility and on the same level, with easy access for in- and out-patients.

**3.50** The guidance provided in this Note can also be used where a hydrotherapy suite is subsequently added to existing physiotherapy accommodation.

**3.51** Most patients receiving hydrotherapy as part of a treatment programme will attend from and return to another treatment area in the rehabilitation department. Other patients will attend directly via the reception area. Some in-patients may move to and from the suite via a hospital street or the reception point, whichever is more convenient.

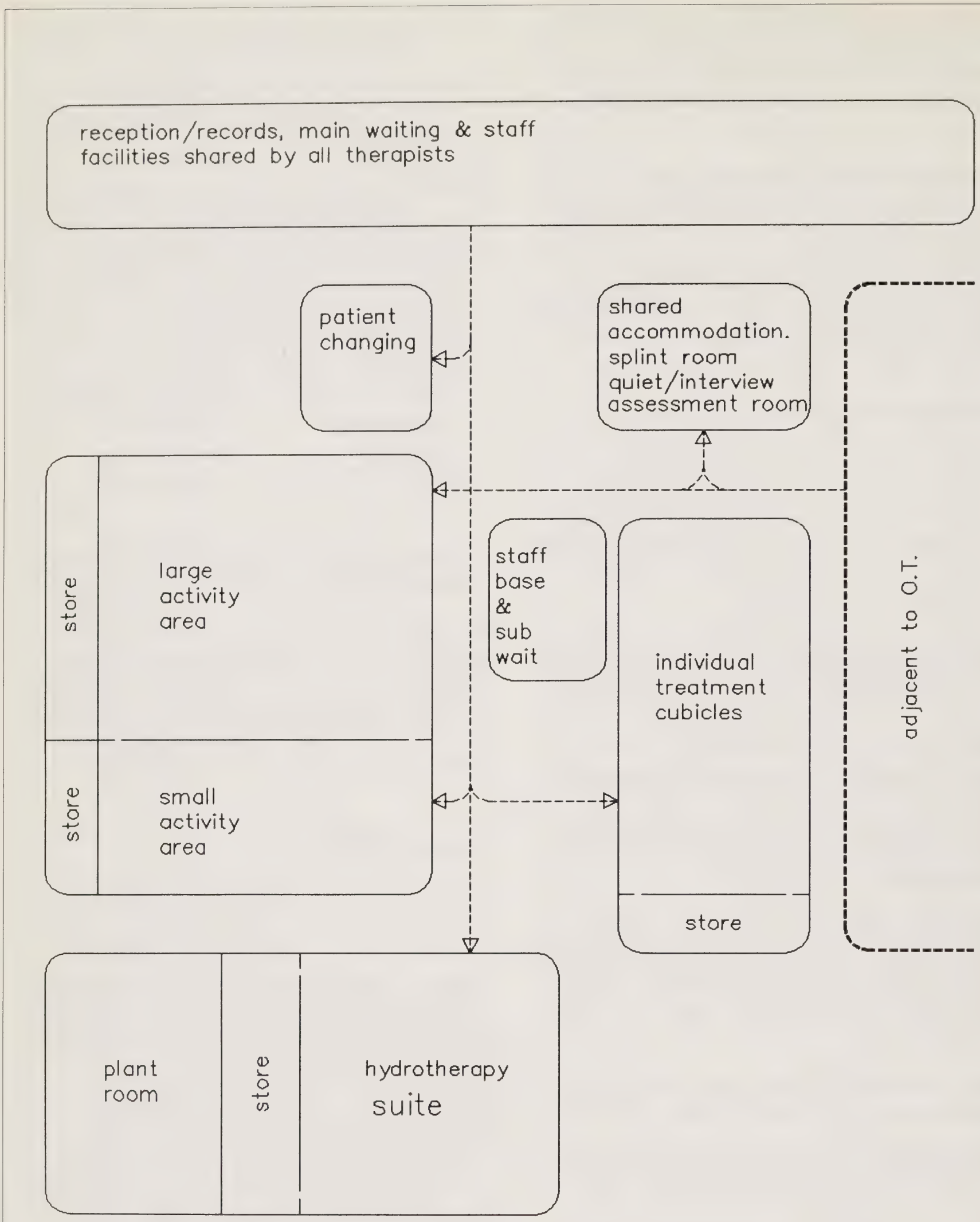


Figure 5. relationships of spaces in physiotherapy.

**3.52** Ambulant patients requiring little or no assistance will change in normal sized cubicles within the suite. Other patients who arrive on a bed, stretcher trolley or in a wheelchair will require additional assistance and space. Their changing accommodation, before and after hydrotherapy, will be available in the curtained recovery area or in the stretcher shower cubicle.

**3.53** Normal procedures involve both staff and patients toileting and showering prior to pool entry and on exit. Patients are assisted as necessary. Entry into and exit from the water will be made either independently, or with assistance or by hoist from wheelchair or trolley, using the safest method for each patient.

**3.54** Hydrotherapy will be undertaken by the physiotherapist with assistance as necessary.

**3.55** Once patients are dry and changed, with any necessary assistance, they should proceed to the rest area. Here they will be able to rest, cool down and have liquid refreshment following their hydrotherapy. Staff should be able to observe this area, which should be distinct from the pool hall to mitigate the diffusion of high air temperatures and humidity (see paragraph 4.60). A laundry/utility area will be required for rinsing, drying and storing hydrotherapy apparel and equipment.

*Hydrotherapy*

## OCCUPATIONAL THERAPY

**3.56** The purpose of occupational therapy is indicated in paragraph 2.9. The overall aim is to provide opportunities to help patients to achieve their maximum potential of physical mobility, dexterity and cognitive function, and to increase personal independence in everyday activities and, also, to assess and prepare people for return to employment. This requires variety and flexibility in the use of equipment and facilities. Patients may undertake activities individually or in groups seated at tables, mainly for treatment to improve dexterity, hand/eye co-ordination, concentration, and cognitive and perceptual training. In some instances the emphasis will be on more strenuous work where the aim is to build up the level of muscle power and fatigue tolerance, eg young men recovering from accidents may be involved in heavy activities such as carpentry, fretsawing or on the rehabilitation bicycle. Some of these activities will be noisy, dusty and sometimes malodourous. Health and Safety at Work policies should be observed.

**3.57** In order to help disabled people cope with personal and domestic activities, accommodation and facilities are required where they can learn new methods and try out special equipment in the Activities of Daily Living (ADL), in a kitchen, a bathroom and a bedroom. Re-education in clothes washing and ironing can be organised within the bathroom, kitchen and light activity areas. However where this is not possible a separate utility/laundry room with appropriate facilities for washing and ironing should be provided.

**3.58** All main occupational therapy departments in the district will need a bathroom including a bath and separate shower. In many instances out-patients can be advised and assessed in their own homes.

**3.59** A bedroom will be required where patients can be taught techniques to cope with dressing, getting in and out of bed, moving from lying to sitting, making the bed, dressing, grooming etc. A shaver socket should be available. Various items of equipment to assist these tasks can be tried out by patients and relatives. This area should be carpeted and patients can practise vacuuming, walking or operating a wheelchair on this type of surface. This facility can be offered to community occupational therapists. Some in-patients can be seen at ward level for this purpose but treatment in a ward is often disruptive to routine and it is not possible to take out-patients to wards.

**3.60** An area is required where interviewing or counselling of patients and relatives may be conducted in privacy, where patients may be tested, where discussions may be held with other professional workers, visitors and students, and for staff training (see also paragraph 4.21).

**3.61** It is advantageous to have access from either or both of the activity areas to a clearly defined outdoor area where patients can practice in wheelchairs, undertake gardening suitable for handicapped persons or undertake toughening up exercises such as sawing and digging (see HBH 45 – External Works for Health Buildings' – in preparation).

**3.62** Occupational therapists and physiotherapists engage in the preparation and application of simple splints: facilities should be shared between these two professions and be accessible to others.

**3.63** Internal relationships within the occupational therapy section are set out in Figure 6. These will be

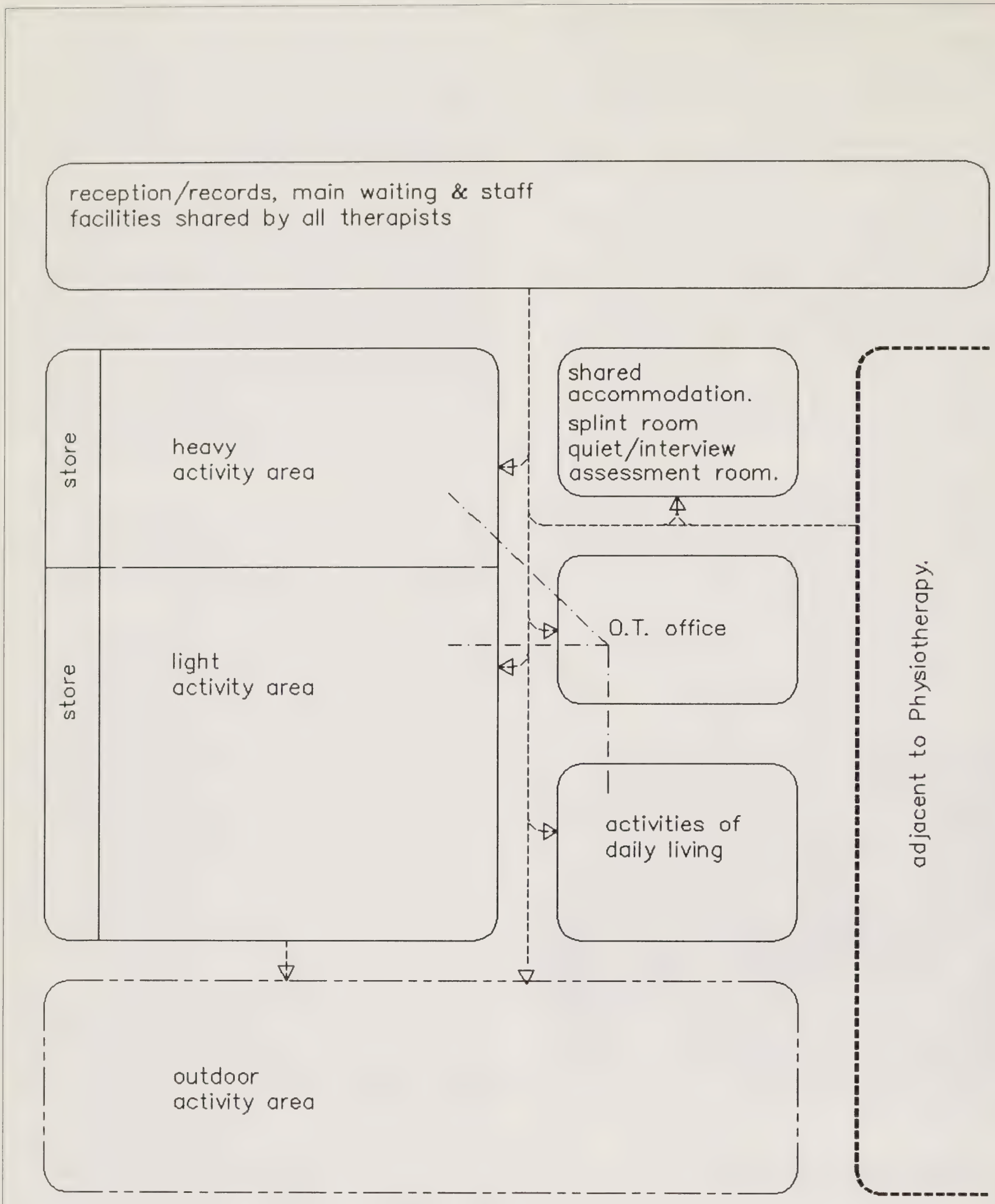


Figure 6. relationships of spaces in occupational therapy.

examined and described in more detail in the description of individual spaces in Chapter 4.

**3.64** After entering the occupational therapy section patients will be directed to the light or heavy activity areas or to the Activities of Daily Living area. Patients attending occupational therapy will not usually require to use the changing area.

**3.65** Within occupational therapy patients will be undergoing treatment on their own or with other patients either in pairs or in small groups. They will be standing or sitting at tables or at a piece of equipment at varying heights. During treatment they may need to move from one point to another and adequate circulation space is needed for the movement of patients in wheelchairs or using walking aids; this may require help from staff.

**3.66** Activities will vary considerably because of the differences in patients, the type of facilities provided, the availability of staff, the location of the hospital and the industries etc. within the catchment area. It is not possible therefore to detail all the treatments likely to occur and the equipment involved. The information which follows attempts to indicate broad bands of activities and equipment.

**3.67** Light activity areas require desk and table space some of which will need to be at varying heights. Patients will sit or stand and can undertake:

a. clerical and office tasks eg writing;

b. copying, typing, guillotining;

c. educational work eg mathematics;

d. remedial games, used on tables, floors or walls;

e. various creative activities;

f. light assembly work;

g. work with a micro-computer.

**3.68** Within the light activity area it is essential for patients and staff to be able to move round freely to get to tables and cupboards and to have access to the walls for positioning of remedial equipment.

**3.69** As indicated in paragraph 3.57, a bedroom, bathroom including WC, kitchen (and sometimes a utility/laundry room) will be required for the Activities of Daily Living. A vision panel to the kitchen will be required. Visual and auditory privacy however will be necessary for the bedroom and bathroom. Adequate space is necessary for movement to enable therapists to assess and rehabilitate patients in the various activities of daily living including the use of mechanical aids where required. This area is likely to be heavily used, as are similar facilities in the day hospital for the elderly, and this factor should be borne in mind in justifying duplication.

**3.70** The heavy activity area will require adequate space for movement. Some of the following activities can be involved:

a. sawing, hammering, drilling, sanding, light metal work;

b. painting and varnishing;

c. the use of hand or electromechanical equipment such as lathes, treadle fretsaws, electronic cycles.

Benches and equipment may need to be at varying heights to accommodate wheelchair users and patients who may be sitting or standing.

**3.71** The heavy activities area may be used by NHS and local authority social services OT technicians to make up special equipment to enable disabled people to manage safely at home, eg construction of stair rails, ramps etc.

**3.72** Adequate secure storage is necessary for materials, tools, portable equipment, work in progress and materials being delivered. The storage arrangements for highly flammable liquids and adhesives should comply with statutory requirements.

## SPEECH THERAPY

**3.73** Speech therapy accommodation should be in a quiet position and the treatment rooms acoustically treated. Patients may be ambulant, with or without walking aids or in a wheelchair. Having been assessed, the treatment will be provided when appropriate on an individual or group basis, frequently by means of advice to families and carers.

**3.74** Some patients will be assessed for communication aids. There must be adequate provision and secure storage for the necessary micro-technology, for video recording equipment, and possibly for a loan bank of communication aids.

# 4.0 Special functional and design requirements

## Introduction

**4.1** This Chapter provides guidance on the functional requirements and design implications for each of the activity spaces described in Chapter 3.

## DEPARTMENTAL ACCOMMODATION

**4.2** Rehabilitation requires the three therapy professions to work closely together. This Note reflects this good practice and promotes optimum, flexible use of all departmental accommodation to take account of local service profiles. Where it is not possible to accommodate the three services in close proximity particular attention should be given to facilitating effective liaison and communication between the departments.

## Entrance

**4.3** For the purposes of this Note, it is assumed that the accommodation is entered from a main circulation route within the hospital. Where, however, a separate outside entrance will be required (see paragraphs 3.8–3.10), it should be protected by a canopy and designed to permit the easy entry and exit of patients on trolleys or in wheelchairs. Two pairs of automatically operated doors may be provided, the space between them forming a draught lobby and dirt trap. The first set of doors should be able to close behind a wheelchair patient or trolley and any attendant before the second set is opened. The design of the doors and/or fixed side panels should be such that any glass incorporated in them is not mistaken for an unobstructed opening.

## Reception/Records

**4.4** The reception point should be situated as near as possible to the entrance, and should have a service counter suitable for both ambulant and wheelchair patients. There should be good oversight of the whole of the waiting area. Dependent on local policies it might be necessary to provide a base for porters. This might conveniently be sited in the reception area.

**4.5** Current patient records may be kept within the reception area and be stored so that they are accessible to therapy staff when required. Reception staff will provide general clerical assistance. The space should contain appropriate telecommunication equipment and any management micro-computer system, and should be the focal point for the alarm call system.

## Main waiting space

**4.6** This will cater for patients who may be ambulant, with our without walking aids, or in wheelchairs who need to wait with escorts prior to changing or proceeding to treatment areas. It should contain space, preferably in a bay, for the safe parking of wheelchairs used for the internal transport of patients. It should also contain a selection of chairs of varying heights and type suitable for patients with varying disabilities. A beverage vending machine may also be provided in this area, if not conveniently located elsewhere eg in the main entrance to the hospital. Similarly provision can be made for at least one payphone mounted at a height for a person in a wheelchair.

**4.7** A specific interview room is not included within the accommodation as it is considered that the number of offices provided together with the quiet room in the department should be adequate to meet the needs of confidential interviews with patients, relatives and others.

## Consultant (optional accommodation)

**4.8** Where there is a consultant with a particular interest in rehabilitation local considerations will determine whether accommodation is best located in the rehabilitation complex or the out-patient complex. In either circumstance suitable accommodation may consist of a consulting/examination room, office and secretarial accommodation. Separate cost allowances are provided for this optional accommodation.

## Secretarial staff

**4.9** Secretarial support will be required for the Superintendent Physiotherapist, the Head Occupational Therapist, Chief Speech Therapist and other clinical staff. Office accommodation for them – which may be shared – will be required. This should be integrated with the reception/records office.

## Seminar room

**4.10** A seminar room as described in HBN 40 – 'Common Activity Spaces Volume 1 Example Layouts; Common Components', will be needed for informal conferences, discussions and tutorials. This room can also be used as appropriate for instruction to, or discussion with, groups of patients.

## Staff room

**4.11** A room in which therapy and other staff can rest and prepare beverages and snacks should be provided in the accommodation. It needs to be big enough to accommodate the number of staff likely to use it, including those employed part-time. Siting must be convenient for use by all groups of staff. It is desirable that the staff room is next to the seminar room with a sliding folding partition between. This will generate cost benefits, and improve space utilisation.

## Staff changing

**4.12 Decentralised changing** (Optional) – When staff do not use central changing accommodation full changing facilities are required. Provision should be made for the secure storage of outdoor clothing and personal items and for the temporary storage of damp clothes. It is assumed that uniforms will be collected from a central point such as a manned uniform store or an automatic dispenser.

**4.13** The accommodation should comprise:

a. full length lockers for the storage of clothing, uniforms and personal items;

b. space for changing and a curtained cubicle for those requiring privacy:

c. provision for the temporary (secure) change of wet clothes;

d. a shower;

e. washbasins.

**4.14 Centralised changing** – Where staff use central changing facilities a small locker room be provided near to or within the rehabilitation department for staff to hang coats and to keep personal items secure in small personal lockers. HBN 41 – 'Accommodation for Staff Changing and Storage of Uniforms' should be consulted.

## Staff WCs

**4.15** WCs and wash hand basins should be associated with the staff changing accommodation and should be related to the number of staff likely to be working in the department.

## Patients' WCs

**4.16** For the number of WCs required in the small and large size departments, see Schedules of Accommodation in Chapter 7. All patient WCs should be wheelchair access WCs, and at least half of them should be dual access. There should be a group of WCs near the main waiting/reception area. In addition to this, patient WCs should be provided within the occupational therapy section as well as in the physiotherapy section. The hydrotherapy suite will have its own dual access WC. (Reference should be made to HBN 40 – 'Common Activity Spaces Volume 4 Designing for disabled people').

## Patients' changing

**4.17** Separate changing rooms are required for men and women and will need to contain lockers for secure storage of clothing and personal possessions, some changing cubicles, appropriate seating, a shower and a wash hand basin. The changing rooms should be related primarily to the physiotherapy activity areas.

**4.18** Changing space and lockers should be provided for half the number of patients expected to be treated at any one time in the activity and exercise areas. Male and female areas should be the same size. Changing facilities for patients using the hydrotherapy suite are given in paragraph 4.63.

## Splint preparation

**4.19** The splint preparation room is required for the construction of made-to-measure splints. Mechanical extract ventilation will be required because of the heat and dust. Particular attention must be paid to the fire risk in this space. Adequate space for the storage of materials is required. If plaster is used, a sink with a drainage filter must be installed.

**4.20** The facilities will be used by both physiotherapists and occupational therapists and the room should be sited convenient to the physiotherapy and occupational therapy treatment areas.

*An occupational therapist making a splint for a young patient.*

## Assessment/Quiet interview room

**4.21** A room is required in which patients who require privacy can be assessed and treated. Treatments include psychological assessment, perceptual training and the use of a micro-computer. It should be located so as to be accessible to all the disciplines in the rehabilitation department. The room should also be used for general interviewing purposes and study. It should be carpeted.

## Storage of linen

**4.22** Secure storage is required for items in everyday use such as pillow cases, blankets, dressing and other towels, overalls, dressing gowns and special clothing such as shorts for patients using the active exercise areas. The store should be located conveniently for the physiotherapy treatment cubicles and activity areas. An exchange linen trolley may be used depending on local hospital policy.

## Children's therapy area (optional accommodation)

**4.23** The circumstances under which additional space may be required for children are indicated in paragraph 3.14. When this accommodation is required a group therapy room should be provided for use by up to six children plus parents and therapists. The accommodation may be used simultaneously or separately by each therapist. Low level notice boards and wall bars should be provided together with a suitable sink for activities with water. Cupboards will be required for toys and other equipment.

**4.24** A children's individual treatment room will also be required which can be shared by all therapists. The room should be comfortable and as informal as possible. Furniture suitable for children should be provided as well as that for therapist, parents or carers.

## Cleaners' space

**4.25** A space is required as a cleaners' base, for the storing of day-to-day requirements for cleaning materials and for parking cleaning equipment.

## Disposal room

**4.26** Space is required for the temporary holding of refuse, soiled linen, and other items pending collection and disposal in accordance with Whole Hospital policies. (See HBN 40 – 'Common Activity Spaces Volume 1' for cleaners' space and disposal room).

## Electrical switchgear

**4.27** A switchroom will be required for housing the main isolator and distribution switch/fuse-gear for the department. The room should be dry and well ventilated with a door that is lockable and opens outwards. The room should be positioned so as to minimise the cost of cabling required to serve the department.

## Outdoor activities

**4.28** The requirements for an outdoor activity area are indicated broadly in paragraph 3.61. It is important that it is near the department. It will be used by physiotherapy and occupational therapy patients. Depending upon the amount of space available, an outdoor activity area can contain items such as:

a. paths with varying slopes, varying grass slopes, areas containing gravel, tarmac and concrete – all for walking practice;

b. steps –also for walking practice;

c. an area for outdoor manual work, eg digging or sawing, if space is available;

d. raised flower beds of varying heights;

e. containers for growing plants – placed on ground or pavement area;

f. a small greenhouse (optional);

g. a paved area for wheelchair practice, other mobility, and sitting.

Further detail is provided in HBN45 – 'External Works for Health Buildings' (in preparation).

## District staff (optional accommodation)

**4.29** Offices for district heads and their secretaries should be grouped together. These staff require telephone cover when they are absent from their rooms and this could be available via any secretarial support or the reception point, if the district staff are based in the DGH.

# PHYSIOTHERAPY

## Superintendent physiotherapist

**4.30** Office accommodation within the physiotherapy section will be needed for the Superintendent Physiotherapist for the management of the section and for interviewing staff, students, patients and their carers.

## Physiotherapy staff office

**4.31** A general office will be required in which physiotherapists can maintain case records and carry out general administrative work. Current case records may be stored in this office. The room should be of a size to accommodate at least half of the therapy staff and should be equipped with suitable desks or tables. Staff require work space, records, storage and telephones.

## Activity area

**4.32** Active treatment of patients will be undertaken in the activity area with individual patients or groups of patients whose treatment does not usually require privacy. The activities taking place generally need more space than is available in individual treatment cubicles. The treatment may involve equipment necessitating ample allocation of space. Some items of equipment are free-standing, others are fixed. Some equipment will need all-round space eg exercise tables, benches, parallel bars, weights systems and exercise ergometers. In addition to the space for free-standing equipment there must be room for patients to participate in group exercises including activities using and throwing balls. The overall space will need to accommodate a wash hand basin, some chairs and a small desk/table for use by the therapist. In planning the whole area account should be taken of the diverse needs of patients using the facilities. Two distinct activity areas are required, described in this Note as the "large" and "small" activity areas. Each area requires a direct entrance from the circulation corridor. In the small size department a sliding folding partition between the "large" and "small" activity areas may provide flexibility of use. Equipment storage space may be common if the areas are adjacent.

**4.33** The planning of both areas should take into account the need for supervision, from every point, by the therapist, the grouping of the equipment in relation to the open area, the avoidance of patient/staff cross traffic, the possibility of the two spaces communicating with each other, and the need to have access to an outdoor space to enable patients to undertake exercise in the open air. The main requirements for the layout of the equipment are for sufficient wall space and enough floor space around apparatus for patients to be assisted by therapists from two, three or four sides depending on the piece of equipment being used. It is important to ensure free wheelchair circulation space between items of equipment.

**4.34** As the overall space is likely to be relatively large a minimum ceiling height of about 3.2m is recommended so as to prevent the space becoming oppressive, and to provide sufficient height for some activities. At least some part of the "large" activity area will require a minimum ceiling height of 4.5m to allow patients to practice "over shoulder" activities and to be accommodated on the top of practice stairs and exercise steps. The walls and floors need to be strong enough to take the load from equipment. As there will be a lot of movement a hard smooth non-slip floor finish should be provided. The ceiling needs to have acoustic absorbent properties and windows should be placed mainly at a high level although some floor to ceiling glazing judiciously placed will improve the area visually. Lighting should be protected, and recessed where necessary. In the physiotherapy "small" activity area, some carpeting may be needed to enable patients to practice mobility on different surfaces.

**4.35** The activity area should be adjacent to the individual cubicle area.

## Treatment cubicles

**4.36** Treatment in the cubicles may include traction and a range of electrotherapy modalities. This area should be easily accessible from the staff base, physiotherapists' office and the patients' changing accommodation. There should be access to hand washing facilities and water for treatments in the treatment cubicle area.

**4.37** The cubicles will be formed by washable curtains hung from ceiling tracks and require adequate space for a couch, chair, mobile equipment and a shelf for small equipment. Provision is required for the hanging of outer clothes. Some cubicles may need to be larger to enable traction apparatus or larger electrotherapy equipment to be used. A welded steel mesh may be required above, behind, and/or alongside some of the treatment couches to provide a means of attaching pulleys or other equipment.

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**4.38** Adequate space is needed within the area to enable wheelchairs and trolleys to pass between the cubicles when the curtains are closed. Mechanical ventilation should be provided and the attention of interior designers should be brought to the need to consider the ventilation when planning and specifying curtain tracks. If the location of the curtains may affect the ventilation, then they should be provided with net headings.

## Individual treatment room(s)

**4.39** An individual treatment room or rooms will be needed for extra privacy, and for some treatments such as ultra-violet light, laser irradiation and respiratory therapy. Good ventilation, blackout, and hand washing facilities are necessary. An oxygen supply and medical vacuum will be required for respiratory therapy. These may be provided by either portable apparatus or by terminal outlets from the hospital medical gases installations if the latter are conveniently available nearby.

*Physiotherapy: Getting going again requires building up strength and confidence.*

## Wax treatment and ice preparation

**4.40** The use of paraffin wax and ice will require the provision of a room adjacent to treatment cubicles, and with easy access to the activity areas. This must have a washable non-slip floor from which wax, ice and water can be easily cleared. The area should be very well ventilated. The ice-making machine will require appropriate plumbing. Storage space for wax, treatment towels and packs is essential together with arrangements for drying towels. A sink which will allow the safe filling of a footbath and draining-board are required. Facilities for the washing of patients' hands and feet are also needed.

## Staff base

**4.41** A small area should be provided for use as a base by physiotherapists who are treating patients in the various treatment areas. It should be associated with the individual cubicle treatment area and should have good oversight of treatment spaces. It should contain hand washing facilities. Discussions with patients prior to treatment can take place here. The space should not be used for general administrative work which should be carried out in the general office provided for that purpose (see paragraph 4.31).

## Sub-waiting space

**4.42** A small sub-waiting space may be required for patients who need to wait for treatment, or for any other purpose.

## Storage

**4.43** In addition to the general store, secure storage is required for the various items of equipment likely to be used in the activity areas including mobile equipment and walking aids. This space must be sited adjacent to or within the activity areas: it should be possible to move apparatus easily into and out of the storage space and to be able to withdraw or replace individual items without disturbing other items. Secure storage is also required in the treatment cubicles area for small items of equipment such as portable electrotherapy appliances.

## Physiotherapy for ward areas (optional accommodation)

**4.44** Treatment will include re-education in walking and mobility exercises which may require the use of parallel bars, a wall bar and a high mat. Ideally, the equipment should be located in a secure area conveniently located to serve the wards. The need for or use of these facilities will vary according to the differing specialties. It should not be accommodated either wholly or partially within the day space. The area should be at least 16m$^2$ with one clear dimension of 4500mm for walking re-education.

# HYDROTHERAPY

**4.45** The function of the hydrotherapy suite is to provide hydrotherapy in water heated to a temperature of between 34°C and 40°C. The suite should be a self-contained operational unit so that it can be closed for maintenance or other reasons without affecting the rest of the physiotherapy facilities.

## Entrance

**4.46** The entrance consists of a staff base: a bay for parking wheelchairs, stretchers, trolleys, etc; a sub-waiting area and space for patients to transfer from ward stretchers to pool trolleys. The staff base should provide facilities for the storage of patient records and administrative activities related to patient and pool management. It should have easy access to the whole of the hydrotherapy suite, with an overview of the pool entrance and rest area. Appropriate resuscitation equipment should be centrally located and immediately available.

## The pool

**4.47** There is no single pool design that will cater for the needs of all categories of patients with entire satisfaction. Consideration should be given to a wide range of available options of size, shape and depth at the planning stage. The requirements of the prime users should be identified and met.

**4.48** The pool arrangement is usually classified according to whether it is constructed above ground level with the water contained behind a parapet, or sunk within the ground so that the water level is either at or slightly below the surrounding level.

**4.49** A parapet pool needs a "freeboard" of at least 100–150mm in order to avoid the water breaking over the pool surround when the level is displaced by persons entering or leaving the pool. Scum channels are built in at this level to control the water depth and remove pool surface contaminants. A similar arrangement of scum channels would be provided in a sunken pool having the water level below the surround level. An alternative arrangement can be considered for a sunken pool whereby horizontal gratings above channels are provided at the surround level so that the water surface is literally at the floor (or "deck") level. The surround would have drainage cross falls to the gratings. The channels of a deck level pool are wider than the conventional scum channels and have to be connected to an appropriately sized balancing tank, usually installed under the pool surround, to cater for water displacement when persons enter the pool.

**4.50** Access to and exit from a deck level pool is often easier for patients with disabilities and in an emergency evacuation, but eye-level surveillance of patients in the water may be better in a parapet pool. It is possible to consider a deck level pool which has a sunken staff access along one side only to provide some supervision at parapet level. Occasionally the inherent geological or geophysical features of a particular site will inhibit the practicability of constructing a pool below existing ground levels.

**4.51** Hydrotherapy pools generally need a water depth of between 1.0m and 1.2m but no single pool depth can meet the optimum requirements for the treatment needs of all patients. Two different depths can be provided in one pool by constructing a "stepped" bottom but it will be necessary to define clearly these different areas by means of contrasting pool floor and wall colours. No attempt should be made to lower the normal water level of a pool to accommodate different treatment depths because this will negate the considerable contribution to water quality control and the removal of surface borne contaminants which are an essential function of the scum or deck level channels in association with the water recirculation and treatment system.

**4.52** Figure 7 illustrates a pool design which is considered to cover an acceptable range of potential usage by a variety of patients including those who will need to enter and exit the water by means of an appropriately operated hoist.

**4.53** The structure forming the hydrotherapy pool tank is usually reinforced concrete but other forms of construction have been used for parapet type pools. The cost allowances assume a reinforced concrete tank construction, finished with ceramic tiles utilising water and chlorine resistant adhesive and grouting.

## Pool services

**4.54** Continuous filtration and disinfection of the hydrotherapy pool water is essential to control water quality within acceptable limits. Details of the guidance on the chemical and microbiological aspects of the health risks to patients and staff and of the engineering plant and chemical dosing equipment required are given in Chapter 6.

**4.55** The hydrotherapy suite air environment will be demanding because evaporation from the pool will produce excessive chemically aggressive humidity at a high ambient temperature. This will require appropriate ventilation and heating systems, for which detailed engineering design guidance is given in Chapter 6, and must also be taken into account in the design and choice of building materials and components used for construction.

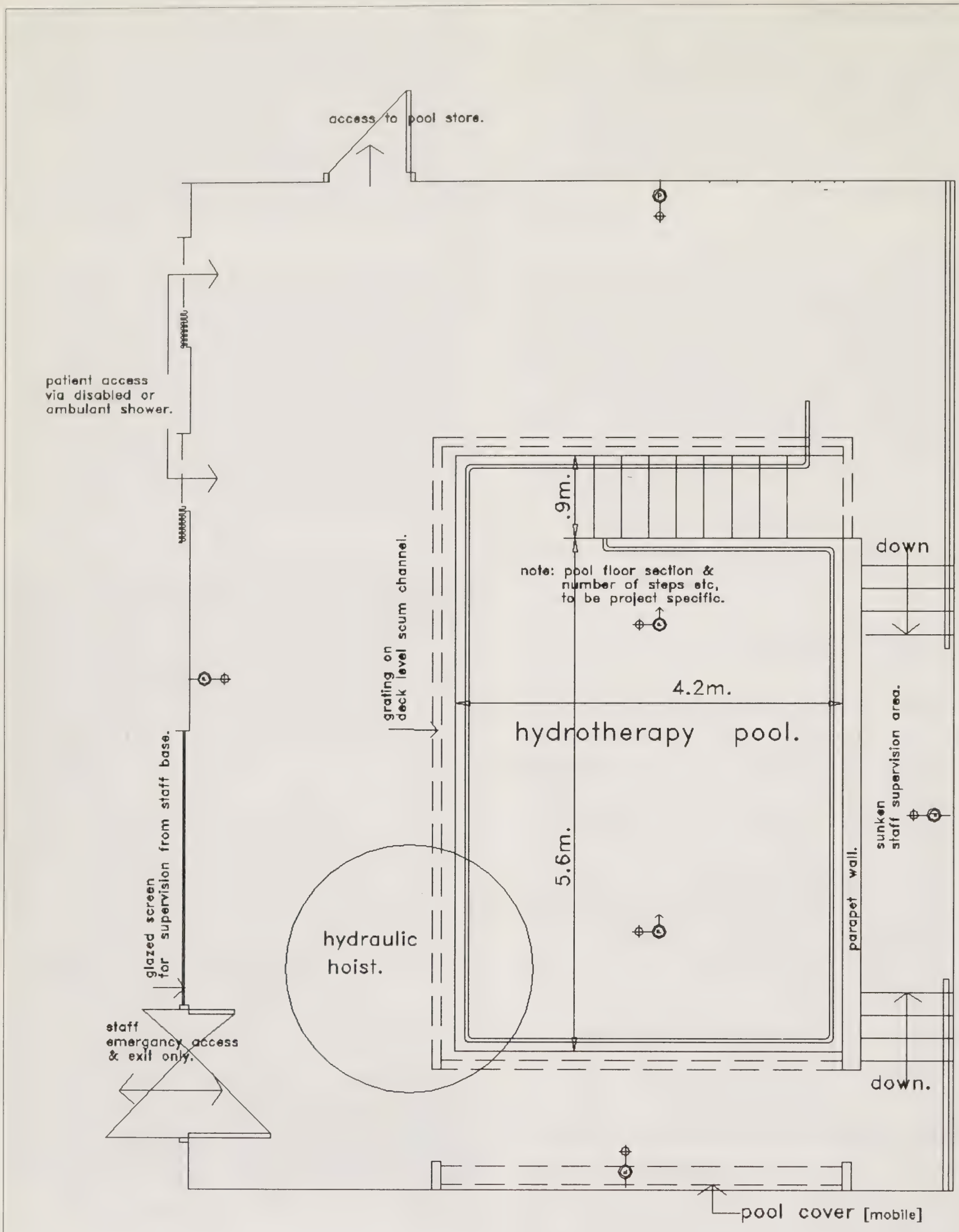



Figure 7. Hydrotherapy pool.

**4.56** The pool hall floor and all surrounding areas including changing facilities and toilets, should be covered in non-slip, easy to clean materials. Access to the pool from the surrounds should be free of obstructions.

**4.57** Natural daylighting of the hydrotherapy pool hall is desirable but privacy and safety should be considered when deciding its level. Double glazing of windows will be appropriate to minimise condensation. However, care must be taken to ensure that sun or light rays do not reflect off the water surface causing distraction or glare. Similar considerations apply to the artificial lighting installation which should also be arranged so that replacement of lamps and fittings is not unduly difficult. Detailed engineering design guidance for the pool lighting installation is given in Chapter 6.

**4.58** An emergency alarm call system should be provided and pull cords to activate it need to be sited within reach of the therapist both in the pool and on its surrounds. Guidance on alarm call systems is given in more detail in Chapter 6.

**4.59** Essential features for the economical operation of a hydrotherapy pool are the provision of energy recovery plant for the pool hall ventilation system and a thermally insulated, floating cover which should be in position at all times when the pool is not operational. This cover should be stored on a manually operated floor or wall mounted roller. Appropriate space should be provided (usually at the end remote from the access steps) to accommodate this equipment without obstructing the pool surround. The cost allowance (see paragraph 1.10) allows for the provision of a flexible floating pool cover constructed from a high density closed cell core bonded to a woven covering and a heat pump unit integrated into the pool hall ventilation plant for energy recovery (see also paragraphs 6.9 and 6.34).

**4.60** The diffusion of high air temperature and humidity from the pool hall into the changing accommodation and patients' rest area should be mitigated as far as this is reasonably practicable. Precise control will be physically impossible but acceptable conditions can be achieved by appropriate design of the ventilation systems (see Chapter 6 for details) in conjunction with restricting the number of access points into the pool hall. These should be limited to standard door height openings respectively positioned in the walk-through showers and in the partition separating the staff base from the pool. If the latter opening does not give adequate supervisory overview then the separating partition should be glazed. It is anticipated that the pool hall will generally be of substantially greater internal height than the adjacent ancillary accommodation in the hydrotherapy suite. This will provide a natural "canopy" above the pool which will greatly assist the desired air movement control.

## Pool counter-current unit (optional facility)

**4.61** Some patients may benefit from a treatment programme which includes sustained "swimming". This is not normally practicable within the relatively small dimensions of a hydrotherapy pool. However, counter-current generating units are available which permit "swimming" to be undertaken without lateral or forward motion. These consist of a local pumping assembly which sucks water from the pool and then returns it to just below pool water level via a nozzle which can be regulated to give varying strengths of discharge jet. These units must be securely fixed at the side of the pool and are usually supplied with appropriate base plates and/or stands suitable for bolting to the pool surround. They also require a permanent electrical supply and controls which comply with safety requirements (see paragraph 6.98). An optional cost allowance is provided for this facility.

## Staff changing

**4.62** Local consideration will need to be given to the provision of discreet staff changing facilities (see paragraphs 4.12–4.14). This decision will be affected by the hospital policy for staff changing, the facilities and their location within the rehabilitation department and their proximity to the hydrotherapy suite. (See HBN 41 – 'Accommodation for Staff Changing and Storage of Uniforms').

## Patients/staff changing

**4.63** An area in which patients can change in privacy and store their clothing and valuables in security is required. It should be adjacent to the showers. Four changing cubicles should be provided for use by ambulant patients who need little or no assistance. The more disabled patients who may be bed or trolley borne and who will require help in dressing and undressing may change in one of the larger cubicles provided in the adjacent recovery area, or in the trolley access shower area. Appropriate space will be required for the reception and transfer of these patients, and for parking their bed or trolley during treatment. Lockers are needed near the cubicles for the secure storage of patients' clothing and valuables. Staff may use this area if alternative suitable facilities are not conveniently located.

## Patients rest area

**4.64** An area where patients can lie down, rest and rehydrate on couches after treatment is necessary. The

area should be sited adjacent to the patients' changing accommodation and may be combined with the changing area where the design permits this as a practical option. Couches should be provided in curtained cubicles, some of which should be large enough to accommodate a patient on a trolley. These cubicles would also be used by such patients for changing. A drinking water point and beverage station should be provided in this area in accordance with Whole Hospital policies.

## Showers

**4.65** Shower facilities are required for all users before entering and on leaving the pool. Consideration should be given to walk-through showers. Patients attending the hydrotherapy pool on a stretcher trolley will require showering before entering and after leaving the pool.

**4.66** Adequate toilet accommodation is required for all pool users. This will include a dual access wheelchair WC and a WC for a semi-ambulant patient.

## Laundry/utility room

**4.67** Space and facilities are required for clothing to be rinsed and dried after use. Space is required for storage of fresh and current towels, gowns, swimwear, pillows and linen required in the rest area, and also the storage of dirty linen items pending collection.

## Storage requirements

**4.68** Storage space is required for rinsed therapy equipment to be dried and kept between use. Accommodation is also required for the storage of the hydrotherapy suite cleaning materials and equipment, and the water testing materials and apparatus.

## Plant rooms

**4.69** Plant rooms will be required to house the equipment for pool water treatment and ventilation. Detailed information is provided in Chapter 6.

# OCCUPATIONAL THERAPY

## Head occupational therapist

**4.70** Office accommodation within the occupational therapy section will be needed for the head occupational therapist for the management of the section and for interviewing staff, students and patients.

## Occupational therapy staff office

**4.71** A general office is needed for occupational therapists to maintain case records and carry out general administrative work. Current case records should be stored in this office. It should be sited so that it oversees and has direct access to the heavy and light activity areas and a view of the aids to daily living section. If such an overview is not practicable, then a suitable staff base should be provided. Staff require work space, records storage and telephones. Any staff working outside the hospital but based in it will also need suitable accommodation.

## Activity areas

**4.72** In small size accommodation it may be unnecessary to provide both light and heavy activity areas, and one large area may fulfil both functions. It is important that the layout of the room allows for heavy/noisy activities (see paragraph 4.77 (a)-(c)) to be at one end of the room, leaving the other available for cleaner more clerical orientated activity, as identified in paragraph 4.73 (a)-(d). The room may also be used for group activities when its overall space availability will be important.

## Light activities area

**4.73** Broad outlines of the treatment undertaken and the individual activities likely to occur in the light activities area are given in paragraph 3.56 et seq. The activities detailed in paragraph 3.67 can be divided into those requiring space for:

a. work tables or desks for writing, boards games and small assembly tasks. The work tables need sufficient space for the therapist to be on one side and the patient on the other, as well as tables with space on either side of the patient;

b. work tables with some equipment requiring space on either side of the patient to undertake the tasks eg making seats for stools; using a micro-computer for therapeutic purposes;

c. free-standing equipment;

d. positioned activities eg wall games.

The overall layout needs to take into account the requirements of each of these groups. An overhead mesh is required over the printing press.

The changing philosophies relating to treatment of patients, eg early discharge from hospital and/or treatment may affect the choice and amount of equipment required in the occupational therapy heavy and light activities areas.

**4.74** The area contains equipment and apparatus which will assist patients to regain motor, cognitive and sensory skills. Some of the activities may be used to stimulate interest and concentration. Acoustic treatment of surfaces, screening and skilful illumination should be used by the designer to reduce distraction.

**4.75** Adequate space will be required for attendance on patients by staff, for wheelchair access and for flexibility in positioning of patients and equipment.

**4.76** The area requires a ready access to stores and needs to be easily supervised. An open rectangular plan rather than an L-shape or long and narrow plan should be adopted. A hard and smooth floor finish is required. Walls should be washable and capable of taking adjustable wall fixings. Many of the activities will be intricate and will require a good standard of natural and artificial light as well as a pleasant external aspect to allow eyes to rest after a period of concentration. Adequate storage is necessary for equipment, materials and ongoing work.

## Heavy activities area

**4.77** Broad outlines of the work undertaken and the individual activities likely to occur in the heavy activity area are given in paragraphs 3.56 et seq. The activities indicated in paragraph 3.70 require space for:

a. worktops, work benches or tables eg for carpentry or other bench work;

b. hand or mechanical equipment eg lathes, treadle fretsaws, drills;

c. painting and varnishing.

The general layout must take account of the varying space and environmental requirements of these activities. In addition external access is desirable to enable the delivery of materials to be made directly to the heavy activity area's storage.

**4.78** The layout of machines, benches and storage cupboards will be determined on individual merit depending upon the shape of the room, position of entrance, the position of windows and work to be undertaken. The spacing of equipment items should be such as to enable ease of supervision, arrangement and removal of benches, ease of servicing machines, the easy supply of materials and ease of movement of patients in wheelchairs.

**4.79** Floor finishes should be non-slip, hard and impervious to spillage of oil. The ceiling should be acoustically absorbent to lower the level of noise. A good standard of illumination is necessary for both natural and artificial lighting. The latter should be well balanced between task and background lighting. Washing facilities are required within the area for washing and brush cleaning. Secure storage in cupboards will be necessary for small tools and items of equipment.

**4.80** The safety of patients and the need to comply with all statutory regulations and protection requirements must be taken in to account in the layout and design. It must be possible to switch of all electrically operated therapy equipment in an emergency. All such equipment must be guarded and maintained in accordance with the Health and Safety requirements.

## Storage

**4.81** Designers should consider the possibility of combining activity and associated storage spaces where it is appropriate to do so, particularly in the small size accommodation. Designers should recognise that long lengths of timber, mostly mopstick handrail and large sheets of ply will need to be stored. These can sometimes be accommodated down the long wall of the heavy end of the activity area, provided there is proper racking both to prevent warping and for safety reasons. For these small size departments, the timber and metal store and material equipment store can probably be combined with additional storage space for loan wheelchair stock. This latter space must have sufficient storage area for these loan wheelchairs which will be used by in-patients awaiting the arrival of their own chair. These chairs are not those used for assessment. Attention should be paid to the storage of flammable items, to ensure compliance with statutory requirements. Security should also be adequate to minimise the risk of unauthorised entry and pilfering.

## Timber and metal

**4.82** A dry, ventilated room is required for the secure storage of timber and metal in varying lengths up to five metres on racks and shelves for use in the heavy activity area. Direct or easy external access for the delivery of such materials is essential but it is equally important for the store to be sited so that materials can be manoeuvred easily to their point of use in the heavy activity area. An incorrect shape of room will preclude the buying of economical sizes of timber.

## On-going work

**4.83** Space is required in which to store patients' on-going work. Racking and shelving will be required. Easy access to both light and heavy activities areas is necessary.

## Materials and equipment

**4.84** Secure storage is required for materials and equipment which will be issued for use in patients treatment. Some equipment may also be loaned to patients during their in-patient stay and will need to be stored. Some racking and shelving will be needed for these.

## Community disability equipment store

**4.85** Secure storage will be needed for equipment belonging to the community services (usually social services departments) which can be issued to patients before discharge (raised toiled seats, walking frames, eating aids, dressing aids etc). If outside the rehabilitation department, it should be easily accessible and be sufficiently secure, to ensure appropriate access only. Space will be required for unpacking and sorting. It is assumed records of these items will be maintained in the OT Department. It is not appropriate for returned equipment to be left in this store. They should be returned to the supplying authority for proper cleansing.

## Assessment wheelchairs

**4.86** Storage is required for a range of wheelchairs and accessories used for assessment purposes and for associated equipment and attachments. Space is required within the storage area to manoeuvre wheelchairs. Consideration should be given to the security of the assessment wheelchairs to ensure that they are not moved away from the department and used for other purposes. This space needs to be associated with the light activities area. Assessment wheelchairs will need to be available also to physiotherapists.

## Occupational therapy for ward areas (optional accommodation)

**4.87** The emphasis of occupational therapy for in-patients is the assessment and practice of the skills of daily living especially self-care. This will take place in the bathroom and at the bedside. In the event of the occupational therapy department being remote from the wards it is advisable to provide one room containing simple kitchen facilities near the majority of in-patient accommodation. Prior to discharge home, patients' ability to prepare snacks and beverages can be assessed and practiced under supervision by the therapist or helper. A supply of equipment can be held there for in-patient use.

## ACTIVITIES OF DAILY LIVING

**4.88** The facilities provided for activities of daily living (ADL) should aim, as far as possible, to simulate domestic environments. This will not be possible in the bathroom where additional space is required for comprehensive assessments using equipment with which patients will need to practise. The kitchen will also need to be larger overall but the design should allow for subdivision between the two elements (gas and electric) in order to reduce actual workspace to more domestic dimensions.

## Bedroom

**4.89** One room containing appropriate bedroom furniture is required to undertake the assessment and training of patients in undressing, dressing and grooming, together with bedmaking and the use of bedroom furniture. Training and advice will also be necessary in some cases in the use of lifting poles and manual or electric hoists. An electric hoist should be positioned so as to allow its use to take a patient from a chair or from a standing position over and into a bed. Two bedrooms may be required in the largest units because of the time taken to practise dressing and undressing and the number of patients requiring to do so. It is not necessary to equip the second bedroom with an electric hoist. A carpet floor finish is appropriate for this room or rooms.

## Bathroom

**4.90** Some patients will require to learn new methods of bathing, washing and using the WC; in conjunction with these the therapists will need to assess patients' requirements for appropriate equipment. These activities will need to replicate, as far as possible, the individual's home environment, and the design and layout of space should provide maximum opportunity for this to occur. Space is therefore required to enable a patient with walking aids or wheelchair to approach the equipment in a similar manner to their own home. This space will also allow for patients who need to try different pieces of equipment and practise their use and to have adequate space in which to do so.

**4.91** The bathroom should accommodate the use of a mobile hoist by providing the necessary space beneath the bath. Practise with this type of equipment will be necessary both for patient safety and the instruction of relatives. An electric hoist should also be provided in this bathroom. It should be positioned so as to allow its use to take a patient from a chair into the bath or over the toilet.

**4.92** In view of the difficulty that some patients have using a bath, it is recommended that a shower is also

incorporated in the bathroom. This should have level access for wheelchair users and a thermostatically controlled water inlet. The shower controls should be accessible from outside the shower area and positioned at a height appropriate for a wheelchair user. The bath, shower, WC and handbasin should be fully plumbed. The WC should be accessible by wheelchair from either side, but otherwise be of a normal domestic type.

## Kitchen

**4.93** The kitchen will provide the area in which therapists will assess and rehabilitate patients in the preparation of food, carrying out cooking and washing up, and the serving and eating of meals. Patients will be assessed in the use of eating utensils and their need for the prescription of appropriate equipment. Space should be provided for the display of the many items currently available. Storage is required for food, cooking utensils and disability equipment. Mechanical extract ventilation should be provided.

**4.94** A gas cooker, an electric cooker, a micro-wave oven and a fridge-freezer should be provided and all should be fully operational. The two main cookers should be placed at opposite sides of the rooms to each other to allow the room to be divided. This will reduce the actual workspace of each "kitchen" to more domestic size dimensions. A variable height sink for use by both sides is recommended so that it can accommodate both seated and standing users. This maximises assessment opportunity when therapists need to recommend optimum heights for modification to the patient's home. Worktops, shelves and cupboards should be at levels to suit both ambulant and wheelchair patients. The front edge of worktops should enable equipment to be clamped upon them. There should be a space for a normal height table suitable for at least four patients to eat any meals which may have been cooked within the kitchen.

## Utility/laundry room (optional accommodation)

**4.95** If the utility/laundry room is considered necessary, it should contain a domestic automatic washing machine, a tumble dryer and a domestic ironing board. All should be fully operational. Within this space, therapists will assess and rehabilitate patients in undertaking washing and ironing of personal clothing. Adequate space is required to enable ambulant patients with or without walking aids, and wheelchair users to move around the space with the therapist.

# SPEECH THERAPY

## Chief speech therapist

**4.96** Office accommodation within the speech therapy section will be needed for the chief speech therapist for the management of the section and for interviewing staff, students and patients.

## Speech therapy staff office

**4.97** Similar general considerations to those in paragraphs 4.31 and 4.71 apply to the office for speech therapists. In the small size section, the staff office and the individual treatment accommodation are combined.

## Individual treatment room

**4.98** This room should be sufficient in size to accommodate a therapist and patient (who may be in a wheelchair) plus a family member and/or an assistant speech therapist. The room should have natural light. It must also be mechanically ventilated and acoustically treated, making it suitable for recording and sound sensitive equipment. There should be storage for files, clinical materials and small assessment items. Hand washing facilities are required too. A full length mirror, either fixed or free-standing, is also required. A large speech therapy section will require an additional individual treatment room.

## Group treatment room

**4.99** The group treatment room should be sufficient in size to accommodate 8 to 10 patients (some of whom may be in wheelchairs) plus a therapist and two assistants – see paragraph 2.22. As groups of patients may attend for several hours beverage making and hand washing facilities should be provided. A large speech therapy section will also require an additional individual treatment room.

## Viewing facilities

**4.100** In order to demonstrate treatment programmes to partners and carers and also for student teaching purposes, a one-way viewing window and wiring for sound should be installed. This may be between the group and individual treatment rooms or, to avoid putting one of the treatment rooms out of action, a small viewing room may be installed between the two rooms.

## Storage

**4.101** It is important that communication aids and other expensive micro-electronic equipment, are securely stored and that there is adequate space for this storage.

## Waiting space for patients

**4.102** The aim should be to site the speech therapy rooms so that patients can use the main waiting space provided. If this is not possible because the main waiting space is too far away or it is necessary for patients to wait close to the treatment room, a small sub-waiting space should be provided adjacent to any office accommodation and the treatment areas. There should be easy access to toilets.

*Speech therapist (on left) demonstrating display of sound patterns to the patient.*

# 5.0 General guidance

## Introduction

**5.1** This Chapter contains guidance concerning aspects of function and design which are common to health buildings generally and which will need to be borne in mind when designing new buildings or upgrading existing premises for rehabilitation services.

## Works Guidance Index

**5.2** Whilst this Note provides guidance that is current at the time of publication, it must be borne in mind that there are wider considerations associated with medical gases, high risk infectious diseases, fire, energy conservation etc. covered by other published guidance which must also be taken into account. Additionally, some aspects of the guidance in this Note may from time to time be amended or qualified. Project teams should first check with the current edition of the Works Guidance Index. Because the Index is published by the Department in May each year and updated only in September and January, project teams should ensure that they investigate the possibility of changes not included in the latest published Index.

## Statutory and other requirements, including Crown immunities

**5.3** This Note takes account as far as possible of all statutory and other requirements in force at the time of publication, but health authorities are reminded of their responsibility for ensuring compliance with all relevant statutes, regulations, codes and standards. Advice on this is given in HC(88)60/HC(FP)(88)29 – in Wales, WHC(89)20.

With the general removal of Crown immunity from the NHS from 1 April 1991 and the setting up of NHS Trusts, building and planning law are legally enforceable – on the NHS. Guidance on the removal of Crown immunity is given in HN(90)27/LASSL(90)15 – in Wales, WHC(91)4 – in respect of a wide range of legislation.

## Upgrading or adaptation of existing buildings

**5.4** The standards set out in this guidance essentially apply to the provision of accommodation by new building and it is not intended that they should be applied retrospectively to existing stock. However, the principles are equally valid and should be applied, so far as is reasonably practicable, when existing accommodation is being upgraded or new accommodation is being constructed within an existing building, which may previously have been used for other purposes. In such cases, the aim should be to meet Building Note standards wherever possible although it is recognised that compromises will inevitably have to be made.

**5.5** The cost of upgrading work should conform to the guidelines indicated in the Department's WKO letter (81)4 issued on 24 July 1981. The guidelines take into consideration the estimated life of the existing building and the difference in cost between upgrading a building and new building.

**5.6** Before any decision is made to carry out an upgrading project, consideration must be given to the long-term strategy for the service; the space required for the new service, and the size of the existing building. Regard must also be paid to the orientation and aspect of the building and the adequacy and location of all necessary support services.

**5.7** If there emerges a prima facie case for upgrading, a thorough analysis of all functional and physical conditions of the exiting building should be undertaken.

**5.8** When comparing the cost of upgrading or adapting an existing building to that of a new building, in addition to the building cost due allowance must be made for the cost of relocating people, demolition and salvage costs, disruption of services in a phased project, and the temporary effects on running costs of any impaired functioning of areas affected by upgrading.

**5.9** The check of physical and other aspects of existing buildings should include:

a. availability of space for alterations and additions;

b. type of construction;

c. insulation;

d. age of the buildings, condition of fabric, eg external and internal walls, floors, roofs, doors and windows, which may be determined by a condition survey;

e. life expectancy and adequacy of engineering services, ease of access and facility for installation of new wiring and pipework, if required;

f. the height of ceilings (high ceilings do not necessarily call for the installation of false ceilings which are costly and often impair natural ventilation);

g. changes of floor levels to obviate hazards to disabled people (see paragraphs 3.2 and 3.23);

h. fire precautions (see paragraphs 5.14–5.17);

j. physical constraints to adaptation such as load-bearing walls and columns.

**5.10** Having decided that existing premises are suitable for upgrading or conversion, the main requirement will be to assess how best the accommodation can be adapted so as to facilitate good practice.

**5.11** The main environmental factors which should be considered are the same as for new building.

**5.12** Upgradings must conform to current fire safety and other statutory regulations. It is very difficult to estimate the fire resistance of floors, walls and doors of existing buildings.

**5.13** This summary of the main aspects of upgrading is necessarily general in character and it is recognised that each upgrading project will present its own individual problems. In many instances compromises may have to be made between Building Note standards and what is possible to achieve. Upgradings should be functionally sound – not merely cosmetic – and appropriate for the projected needs of patients and staff for a number of years to come.

## Fire precautions

**5.14** It is essential that project teams familiarise themselves with the guidance contained in the FIRECODE suite of documents which contain the Department's policy and technical guidance on fire precautions in hospitals and other NHS premises. In particular, the need for structural fire precautions and means of escape from the whole accommodation must be taken into account at the earliest possible planning stage. The key document for these aspects in hospitals is FIRECODE: 'Fire Precautions in new hospitals', HTM 81.

**5.15** In addition, basic policy, principles and key management guidance are contained in 'Firecode: Policy and Principles'. Other FIRECODE documents include the Heath technical Memoranda '80' series (which give technical guidance on various building, engineering and equipment issues), the Fire Practice Notes series (dealing with various specialist aspects of fire precautions) and Nucleus guidance. Existing HTMs will, in due course, be reissued in FIRECODE format. The suite includes 'Firecode: Directory of Fire Documents' which lists references to relevant legislation and relevant fire precautions guidance issued by DHSS, the Department of Health and other sources, for example, the Home Office. Publications in the existing HTM '80' series are listed in the Bibliography at the end of this Note.

**5.16** It is important to establish during the design stage those aspects of fire safety strategy which affect the design configuration and structure of a project. At appropriate stages of the design process, the architect and engineer should discuss and verify their proposals with the local fire authority, and ensure that the project team and all other planning staff are fully acquainted with the fire safety strategy for the design in terms of operation (staff responsibilities etc), equipment provision, and buildings and engineering layouts. Health Technical Memoranda 57, 58, 59 and 60 give detailed information on the selection of fire resisting components.

**5.17** The principles of fire safety apply equally to new projects and to alterations and upgrading of existing buildings.

## Smoking

**5.18** Health Circular HC(85)22 dated May 1985 – WHC(85)31 dated June 1985 in Wales – provides guidance about smoking on health premises. While recognising that the responsibility for determining local policies rests with the health authority, the circular recommends that smoking should be restricted as far as is practicable and, where it is permitted, confined to specially designated areas which are clearly signposted. In such areas ventilation should be sufficient to prevent discomfort to non-smokers and the spread of odours to other areas of the premises.

## Economy

**5.19** The planning of hospital buildings requires design solutions which not only satisfy functional requirements but also ensure maximum economy in respect of both capital and running costs. Due weight must therefore be given to the questions of space provision, maintenance (including cleaning), energy consumption and staffing requirements.

**5.20** Planning should ensure that spaces are used as intensively as possible and are not unnecessarily duplicated. Economical space provision can be achieved in the following ways:

a. by planning for spaces to be used more intensively for a particular purpose. This means that the

amount of space for a service or group of services should be no more than is needed for the anticipated workload, staffing levels and available revenue allocation, and that spaces should be used more, where possible, by different users of the same specialty;

b. by planning for spaces to be used for more than one function or purpose. This means reducing the specialised nature of the accommodation, when possible, so that its use by various people for various purposes is not unduly restricted or precluded.

**5.21** To ensure that there is no over-provision of new accommodation, project teams should first evaluate the utilisation of similar existing facilities in relation to their workload and staffing.

## Damage in health buildings

**5.22** When designing and equipping health buildings the likely occurrence and effects of accidental damage should be considered. Damage in health buildings has increased due to the use of heavier mechanical equipment for the movement of patients and supplies and, to some extent, as a result of lightweight, often less robust, building materials. Most damage to doors, and to floor and wall surfaces, is caused by wheeled traffic. Measures to minimise damage should be taken in the form of protective corners, buffers and plates, and to proper continuation of floor surfacing ie strong screeds and fully bonded floor coverings. Protective devices should be capable of being renewed as need arises. Reference should be made to the relevant British Standards, to the advice given in the Department's DC (Supply) letter DS 42/75 dated 5 August 1975 on the buffering of moveable equipment, and to the guidance contained in HBN 40 – 'Common Activity Spaces Volume 2 Corridors'. Further information is provided in Health Technical Memoranda 56, 58 and 61.

## Security

**5.23** Assaults on hospital staff and theft of NHS property are recognised problems. The project team should discuss security with the officer in charge of the local Police Crime Prevention Department and the hospital or district security officer or adviser at an early stage in the design of the building. Fire and Security Officers should be consulted currently because the demands of security and fire safety may sometimes conflict. The attention of planners is drawn to Circular HN(84)26, dated December 1984 (in Wales, Circular WHN(85)1), about Security, and the NHS Security Manual issued with the Circular.

## Signposting

**5.24** HBN 40 – 'Common Activity Spaces Volume 2 Corridors' issued in February 1986 and HTM 65 'Signs', issued in November 1984, should be consulted for general guidance. The use of colour coding to assist people is recommended.

## Internal spaces

**5.25** Internal rooms may contribute to economy in planning but the resulting continuous need for artificial lighting and mechanical ventilation will add to both capital and running costs. Such rooms do not provide good working conditions and staff may therefore be difficult to retain. Internal spaces should be used only for activities of infrequent or intermittent occurrence or which demand a controlled environment. Rooms that are likely to be occupied for any length of time by staff or patients should have windows.

## Education and training

**5.26** Requirements of therapists, student therapists and support staff will need to be taken into account, as should those for nurse education (particularly post-basic courses) and other professional staff. The appropriate persons and/or bodies should be consulted at the initial planning stages (see HBN 42 – 'Accommodation for Education and Training').

## Undergraduate medical students

**5.27** It is likely that some teaching of undergraduate medical students will take place in the accommodation, and if their numbers neccessiate additional space, this should be provided as part of the overall requirements for the department. Reference should be made to the Department's letter DS 65/74 about teaching hospital space requirements, issued on 22 March 1974, and letter DS 86/74 dated 27 March 1974. (In Wales, reference should be made to letter HSD3/57/1 dated 29 April 1974).

## Postgraduate medical education

**5.28** Although education requiring special facilities will take place in the district's education centre, some teaching has to take place in the department. Apart from the use of seminar rooms, no special facilities are normally required elsewhere in the department.

## Natural and artificial lighting

**5.29** A light and pleasant interior is required with an adequate level of illumination that can be varied to suit functional activities. Daylight is an important amenity for patients and staff but, because natural lighting is variable in quality and quantity the provision of a comprehensive artificial lighting installation is essential.

**5.30** The orientation of accommodation is an important consideration in any building scheme. Sunlight within a building enhances colour and shape and helps to make a room bright and cheerful. Glare should be minimised and may be controlled by curtains or blinds. Solar gain can be mitigated by external screens or by architectural detailing of the shape of windows and depth of reveals. (See HTM 55 – 'Windows' Section 2.2).

**5.31** Artificial lighting should be capable of providing the required levels of illumination at all times. It also has an important contribution to make to the aesthetic appeal of the interior. The design should provide task lighting of the required intensity with low-contrast glare-free background illumination. Clinical areas will require the use of approved colour rendering light sources.

## Ventilation

**5.32** Natural ventilation is usually caused by the effect of wind pressure. It will also occur to some extent if there is a temperature difference between inside and outside the building and this thermo-convective effect frequently predominates when the wind speed is low. Ventilation induced by wind pressure can promote high air change rates through a building if air is able to move freely within the space from windward to the leeward side of the building. Internal partitions, fire compartments walls and closed doorways can however often impede the flow path and when this happens the process will be more dependent on single sided ventilation. Nevertheless, even this degree of obstruction to air movement, acceptable ventilation may still be obtained without excessive window openings which could prejudice safety, security and comfort. Some types of windows, eg vertical sliding, can enhance single sided air exchange by temperature difference and these will improve the overall rate of natural ventilation in protected or sheltered areas where the effect of wind pressure is likely to be minimal. Section 2.3 of HTM 55 – 'Windows' and BS5925 A Code of Practice for Design of Buildings – provides further guidance on this subject.

## Flooring

**5.33** It is important to select a floor covering which contributes towards the creation of an attractive environment, but which does not present a hazard to the movement of wheeled equipment. It is important that whatever floor covering is chosen it can be effectively cleaned, maintained and, where necessary, repaired. Rapid developments in soft floor covering technology have produced a wide variety of new materials.

**5.34** Floors should not present or appear to present a slip hazard and the patterning should not produce disorientation. Surface drag, static electricity, flammability, and infection hazards are other factors which need to be considered. (See also paragraphs 5.35 and 5.36).

## Maintenance and cleaning

**5.35** Materials and finishes should be selected to minimise maintenance and be compatible with their intended function. Building elements that require frequent redecoration or are difficult to service or clean should be avoided. Special design consideration should be given to elements such as entrances, corners, partitions, counters and any others which may be subjected to heavy use. Floor finishes should be restricted in variety and, where soft floor coverings are specified and spillage is anticipated, they should have a backing impervious to fluids and a non-absorbent pile. Wall coverings should be chosen with cleaning in mind.

**5.36** Health Technical Memoranda 56, 58 and 61 give guidance on these aspects for partitions, internal doorsets and flooring.

## Design features

**5.37** The physical limitations of many people impose special demands on internal design and fittings. Reference should be made to the ergonomic drawings in HBN 40 – 'Common Activity Spaces' Volumes 1 to 4.

## Component Data

**5.38** The Component Data Base consists of a series of Health Technical Memoranda which provide specification and design guidance on building components for health building which are not adequately covered by current British Standards. No firms or products are listed. The numbers and titles of the HTMs in the series are listed in the bibliography.

## Courtyards

**5.39** Courtyards and external areas immediately adjoining the department should be used wherever possible for both

physiotherapy and occupational therapy activities. Reference should be made to HBN 45- 'External Works for Health Buildings' (in preparation) for more detailed guidance on this subject. Courtyards enable more rooms to receive natural daylight and ventilation. Also they provide an outlook which can compensate for the lack of a longer view. Suitable layout and planting can provide a stimulating outlook and can help to preserve privacy in surrounding rooms. Ground cover planting is often more successful than grass and is easier to maintain.

**5.40** Many rehabilitation departments would derive benefit from the use of courtyards; for example, for gardening for occupational therapy, and an outdoor exercise area for physiotherapy. Thresholds should be designed to facilitate the movement of disabled people. Seating should be provided. Access for maintenance should be from a hospital street or other corridor so that patients and staff are not disturbed. Adequate water points, power-points and lighting, if necessary, should be provided in all courtyards.

## Information technology in the NHS: provision for Automatic Data Processing (ADP)

**5.41** Information technology has a central role in Health management. The use of computers and telecommunications – and indeed the rate of technological innovation – continues to increase. The implications for building project teams are threefold: firstly, a requirement for the housing of the computer(s): secondly, a requirement for the provision of ducts for transmission cabling: and thirdly, sufficient space and adequate power supplied for modems, visual display terminals, printers and associated software and stationery. Even if the introduction of automatic data processing is not proposed at the time that the project team completes its brief, it will be advisable to design in such a way that equipment can be introduced easily and quickly at some later date.

**5.42** There are two principal matters of concern: visibility and noise. Visual display terminals are now a familiar sight and it will easily be appreciated that they cannot be reduces beyond a certain size. Consequently, sufficient and convenient space must be provided for them; also, since the brightness of the letters displayed on the screen cannot exceed a certain limit, special attention must be given to the ambient lighting to ensure that the contents of the screen are legible. space will be required in front of the screen for a keyboard. The problem of noise arises from the alternative ways of obtaining data from the computer, namely a printer which can provide printed paper copies of the data in the computer. Much has been done to reduce noise and the latest laser printers work reasonably silently. Noise may not be too noticeable during normal working hours, but during quiet hours it will probably not be acceptable unless special arrangements are made, such as the positioning of the printer at a site remote from patient areas.

**5.43** Computing expertise is now widely available in the NHS and project teams should ensure that, at an early stage, they inform themselves concerning current and projected local computing policies, and that their proposals conform with them.

# 6.0 Engineering services

## Introduction

**6.1** This Chapter describes the engineering services contained within a rehabilitation department, and their possible integration with the engineering systems serving a whole site. Its purpose is not to inhibit the design solution but to acquaint the engineering member of the multi-disciplinary design team with the design criteria, material specifications, and reference data needed to meet the functional requirements.

**6.2** Documents referred by number, eg[10], are listed at the end of this Chapter. They are numbered in order of first appearance, repeated references retaining the same number.

## Model specifications

**6.3** A series of model specifications for the specialised engineering service in health-care buildings have been issued nationally and are sufficiently flexible to reflect local needs. The cost allowance for the engineering services in each functional unit of this department is based on the qualities of material and workmanship described in the relevant parts of the model specifications.

## Economy

**6.4** Engineering services are a significant proportion of the capital cost and thereafter remain a continuing charge on revenue budgets. The project design engineer should therefore ensure not only utmost economy in initial provision, consistent with meeting the functional requirements and maintaining clinical standards, but also the optimum benefit from the financial resources these services are likely to absorb during their lifetime.

**6.5** Where alternative design solutions are available, their consequential capital and running costs should be compared using option appraisal techniques[1] so that due consideration is given to the need for, and the cost of, maintenance and the eventual replacement of plant and equipment.

**6.6** The economic appraisal of alternative design solutions should include the heat conversion and distribution losses at the point of use. Where buildings are located remote from the development's load centre, these losses can often equal the useful energy consumed.

**6.7** In any new project, consideration should be given to energy management and to the facilities offered by a Whole Hospital control system to enable some measure of energy accounting to be exercised at departmental level.

**6.8** After satisfying the Building Regulations[2] on the standards of thermal insulation provided, consideration should be given to the economics of additional insulation to the ground floor slab and to the roof (see Engineering Data Sheet CE7[3]), particularly where accommodation is located in a building of low-rise construction. Where there is a solidly constructed ground floor, the inclusion of floor insulation will also contribute to patient and staff comfort. Guidance concerning the economic thickness of thermal insulation relative to the cost of energy, 'K' values, temperature differences, capital costs and hours of use is given in Engineering Data Sheet CE11[4].

**6.9** Similarly, in view of the increasing costs of generating heat energy, consideration should be given to the economics of appropriate equipment for recovering some of the value of the energy which would otherwise be discharged by mechanical ventilation systems and also for programmed turning-off, or reduction, of heating and ventilation in those spaces used only for part of the day. This aspect is so significant for the ventilation requirements associated with the hydrotherapy pool, that the cost allowances include the provision for energy recovery equipment in this system (see paragraph 6.35).

## Maximum demands

**6.10** User demand on engineering services is often difficult to predict, but experience indicates that services designed for simultaneous peak conditions are seldom fully utilised in practice. The estimated maximum demand and storage requirement (where appropriate) for each engineering service in this accommodation will need to be assessed individually to take account of the range, size and shape of the functional units, geographical location, operational policies and intensity of use. As a guide, and for preliminary planning purposes only, the following are the estimated maximum demands for a large size rehabilitation unit, a small size unit and a hydrotherapy pool option.

**Small rehabilitation department**

| Service | Typical Max. Demand | Notes |
|---|---|---|
| Heating/ventilation (kW) | 155 | |
| Cold water (litre/sec) | 1.3 | storage 1200 litres (24 hour supply) |
| Domestics HWS (litre/sec) | 1.6 | storage 200 litres (2 hours recovery) |
| Supply ventilation ($m^3/s$) | 1.89 | |
| Extract ventilation ($m^3/s$) | 1.94 | |
| Electrical (kVA) | 27 | includes 14 kVA essential |
| Fuel gas (litre/sec) | 0.5 | |
| Steam | No requirement | |
| Medical gases | No significant requirement | see paragraph 4.39 |

**Large rehabilitation department**

| Service | Typical Max. Demand | Notes |
|---|---|---|
| Heating/ventilation (kW) | 200 | |
| Cold water (litre/sec) | 1.55 | storage 1400 litres (24 hour supply) |
| Domestic HMS (litre/sec) | 1.95 | storage 240 litres (2 hours recovery) |
| Supply ventilation ($m^3/s$) | 2.36 | |
| Extract ventilation ($m^3/s$) | 2.43 | |
| Electrical (kVA) | 32 | includes 16 kVA essential |
| Fuel gas (litre/sec) | 0.5 | |
| Steam | No requirement | |
| Medical gases | No significant requirement | see paragraph 4.39 |

**Hydrotherapy Suite**

| Service | Typical Max. Demand | Notes |
|---|---|---|
| Heating/ventilation (kW) | 160 | |
| Cold water (litre/sec) | 1.0 | storage 700 litres (24 hour supply) |
| Domestic HWS (litre/sec) | 1.0 | storage 650 litres (2 hours recovery) |
| Pool cold water fill (litre/sec) | 3.0 | |
| General supply ventilation ($m^3/s$) | 0.37 | |
| Pool hall supply ventilation ($m^3/s$) | 0.75 | |
| Dirty extract ventilation ($m^3/s$) | 0.11 | |
| Pool hall extract ventilation ($m^3/s$) | 1.02 | |
| Electrical (kVA) | 13 | includes 7 kVA essential |
| Fuel gas | No requirement | |
| Steam | No requirement | |
| Medical gases | No requirement | |

## Space requirement for services

**6.11** The satisfactory performance of plant in health care buildings is particularly important and the design should allow for ease and safe means of access and space for the necessary frequent inspections and maintenance and for eventual removal and replacement. As far as practicable, however, this access should be protected from unauthorised entry.

**6.12** Recommended spatial requirements for mechanical, electrical and public health engineering services in health buildings are given in HTM23[5]. The information in HTM23 is specifically intended for use during the initial planning stages when precise dimensional details of plant are not available.

**6.13** The distribution of mechanical and electrical services to final points of use should, wherever possible, be concealed in ducts, walls and above ceilings. Heat emitters should be contained within a 200mm wide perimeter zone under window sills and critical dimensions should be taken

from the boundary of this zone. For costing purposes the 200mm zone, which includes the floor area occupied by minor vertical engineering ducts, is included in the building circulation provision.

## Activity Data

**6.14** User requirements, environmental conditions and equipment arrangements, as described in the Activity Data Sheets (see Chapter 8) should be referred to when positioning service components and outlets.

**6.15** Section 6 of the Health and Safety at Work etc Act 1974[6], as amended by Schedule 3 of the Consumer Protection Act 1987[7], imposes statutory duties on all persons who design, manufacture, import, supply, install or erect "articles for use at work". One of the requirements of this section is to ensure, so far as is reasonably practicable, that the article is so designed and constructed that it will be safe and without risks to health at all times when it is being set, used, cleaned or maintained by a person at work. All parts of engineering systems are covered by the term "articles for use at work" and designers of these systems for health care premises must therefore fulfil their statutory obligations.

## Fire safety

**6.16** Design guidance for the fire safety requirements in new hospitals is given in HTM8[8]. Technical information concerning the design and specification of fire detection and alarm systems is detailed in HTM82[9], which also replaces or modifies certain clauses of BS 5839 Part 1[10] to meet the needs of health care premises. More general advice on fire prevention is given in HTM83[11].

**6.17** The design of the engineering services should accord with the recommendations in the above series of HTMs and the engineer should verify his proposals in accordance with the procedure in paragraph 5.16.

## Noise

**6.18** Excessive noise in the individual areas, whether internally or externally generated and transmitted, can adversely affect the operational efficiency of the department and can cause discomfort. The limits and means of control advocated in Hospital Design Note 4[12], including its revisions[13], and the means of control given in Engineering Data Sheet DH1[14], should provide an acceptable acoustic environment. In addition to designing for control of noise levels, there may also be a need to ensure speech privacy, ie that confidential conversation is unintelligible in adjoining rooms or spaces. The acceptable noise level and, where applicable, any requirement for speech privacy in the individual spaces in this department is shown on the Activity Data A-Sheets.

## Control access

**6.19** Primary engineering distribution control and isolation devices must be protected against unauthorised operation, eg any switchgear and fuse-boards not located in the departmental switchroom (see paragraph 6.78 should be housed in secure cupboards. These should be located in circulation rather than working areas.

## Engineering commissioning

**6.20** It is most important that engineering services should be fully commissioned. HTM17[15] describes the requirements which should be included in the design and construction contract documents. Flow measurement and proportional balancing of air and water systems requires adequate test facilities, eg orifice plates, venturi valves, etc to be incorporated at the design stage.

# MECHANICAL SERVICES

## Introduction

**6.21** The mechanical services in the small and large size rehabilitation functional units includes the provision of heating, ventilation, domestic hot and cold water services and gas. For cost allowances purposes, the distribution of these services is deemed to commence at their points of entry into the department and includes ductwork, pipework, fittings, controls and connections to equipment and terminal outlets. The cost allowance also includes for an appropriate proportion of the centralised ventilation plants and associated controls serving these functional units.

**6.22** The mechanical services in the hydrotherapy suite functional unit and the cost allowance includes providing the following:

a. supply and extract ventilation systems and air handling plant, including integral heat pump for energy recovery;

b. pool water circulation system, including pumps, pipework, strainer, filter with back-wash control valve and heating calorifier;

c. pool accessories, including skimmer units, inlets, outlets and drain connections, water "make-up" system;

d. pool water treatment equipment and associated control systems.

e. domestic hot and cold water services from their point of entry into this functional unit.

**6.23** The environmental requirements of individual spaces are shown in the Activity Data Sheets. Recommended room temperatures, air change rates, hot water service temperature etc are grouped under "Technical Design Data" on each A-Sheet. The B-Sheets give the disposition of engineering outlets for the activities described.

## Heating

**6.24** General space heating requirements can usually be met by low pressure hot water radiators operating as a sub-system from the primary heating distribution system. In the workshop, gymnasium and exercise areas fan assisted convector units on a separate constant temperature circuit, possibly with fresh air inlet, may be appropriate as these areas generally have a large amount of wall and floor mounted equipment. Some strengthening or protection of these units may be required to prevent damage by balls. Also high air velocities should be avoided in spaces where shuttle cocks or table tennis balls are likely to be used.

**6.25** Radiators should normally be located under windows or against exposed walls, with sufficient clear space between the top of the radiator and the window sill to prevent curtains reducing the output, and adequate space below to allow cleaning machine to be used. Where a radiator is located on an external wall, back insulation should be provided to reduce the rate of heat transmission through the building fabric.

**6.26** Because of the chemically aggressive high humidity levels which are a persistent and inherent feature of the hydrotherapy pool hall, it is recommended that radiators or low pressure hot water radiant panel heaters should be avoided. The fabric losses for this space should be dealt with by the ventilation system.

## Temperature controls

**6.27** To facilitate overall temperature control, the flow temperature to radiators should normally be modulated by an external ambient compensator. All radiators should be fitted with thermostatic radiator valves. These should be of robust construction and selected to match the temperature and pressure characteristics of the heating system. The thermostatic head, incorporating a tamper-proof facility for presetting maximum and minimum room temperature, should be controlled via a sensor located integrally or remotely as appropriate. To provide frost protection at its minimum setting, the valve should not remain closed below a fixed temperature. Frost protection should also be provided for the heating elements of fan convector units having fresh air inlets by means of integral thermostats inhibiting the operation of the fan motors.

**6.28** The heating within the rehabilitation department should be equipped with time switch control and programmed to accommodate the working hours of the unit. The control system, preferably incorporating an optimum-start device, should be used to set-back the space temperature to an anti-condensation level of approximately 10°C when the accommodation is closed (actual set-back to be determined from local trials). To allow for occasional abnormal hours of working, a conveniently sited manual override time restricted switch with visual indication should be provided for use by authorised staff so that the plant, including any associated ventilation systems, can be promptly restored to its full operational state.

## General ventilation requirements

**6.29** Recommendations for the ventilation of individual spaces in this department are shown on Activity Data A-Sheets. Mechanical ventilation should be provided for treatment rooms and areas, the ice/wax preparation room, physiotherapy activity area and the ADL kitchen, bathroom and bedroom.

**6.30** Mechanical ventilation systems are expensive in terms of capital and running costs and planning solutions should be sought which take maximum advantage of natural ventilation. It is acknowledged that planning constraints imposed by the building shape and/or the functional relationship of specific spaces will often result in some measure of enclosed internal areas. Ventilation costs can, however, be minimised by ensuring that, wherever practicable, core areas are reserved for spaces that require mechanical ventilation irrespective of whether their location is internal or peripheral. Examples are sanitary facilities, rooms whose functional requirements have specific environmental needs, or spaces where windowless accommodation is acceptable. Other spaces appropriate to core areas are those which have only transient occupation and therefore require little or no mechanical ventilation. Examples are circulation and some storage areas.

**6.31** Mechanical ventilation should generally be arranged to encourage uniform air movement within the space. The design should allow for an adequate flow of air into any space having only mechanical extract ventilation. Transfer grilles should be provided in doors or walls to connect such spaces to either naturally ventilated corridors or other spaces with mechanical air supply. Such arrangements, however, should avoid the introduction of untempered air and should not prejudice the requirements of fire safety or speech privacy.

**6.32** Ventilation supply plant should include air filters having a minimum arrestance of 85% and a minimum average dust spot efficiency of 25%, when tested in accordance with BS 6540, Part 1[16]. Filters must be readily accessible for replacement and maintenance purposes, and be provided with a pressure-differential indicator; coarse pre-filters may be necessary where the intake air is exceptionally polluted. With the exception of the hydrotherapy pool hall, heater batteries should be sized for the ventilation requirements only, ie not the building fabric loss.

**6.33** A separate extract system will be required for "dirty" areas, for example utility and sanitary facilities, and a dual motor/fan unit with an automatic changeover facility should be provided to ensure that the rooms are always maintained at a negative pressure when the accommodation is in use.

**6.34** External discharge arrangements for extract systems should be protected against back pressure from adverse wind effects and located to avoid re-introduction of exhausted air into the building through air intakes and windows.

## Ventilation of hydrotherapy suite

**6.35** The hydrotherapy pool hall should have a supply and extract ventilation system dedicated to this accommodation. The relatively high ventilation rates and air temperatures necessary within the pool hall have significant revenue expenditure implications. This justifies the provision of additional equipment to recover some of the heat energy which would otherwise be discharged by this system. The cost allowance includes a heat pump unit integrated within the pool hall air handling plant, together with associated automatic controls. This should permit recirculation of dehumidified extract air to the maximum practicable extent, as determined by prevailing ambient conditions, subject to a recommended minimum fresh air input of approximately 20 per cent of the total ventilation supply rate (see also paragraph 6.38).

**6.36** The diffusion of high air temperature from the pool hall into the ancillary changing and recovery accommodation should be mitigated as far as this is reasonably practicable. Current practice demonstrates that, providing the physical openings between the pool hall and the ancillary accommodation are restricted (as described in paragraph 4.60), an acceptable balance can be achieved by creating a positive air movement from the ancillary accommodation into the pool hall. Usually the supply air is introduced into the ancillary accommodation in positions remote from the pool hall and the direct mechanical extract from this accommodation is limited to that required for the toilets and the laundry/utility room. The substantial balance of the air supplied to the ancillary accommodation will then flow via the physical openings into the pool hall to be collected by the pool hall extract system which should be sized accordingly.

**6.37** In order to mitigate condensation on the building fabric (especially windows) it is normally preferable that the supply air to the hydrotherapy pool hall be introduced at high level and be directed to the perimeter of the hall, thus allowing the air flow to circulate down the windows and wall structure. With this arrangement, the extracts would be positioned directly over the pool.

**6.38** It is recognised good design practice that the supply air rate for a swimming pool be based upon the total wetted surface area of the pool and its surrounds. Generally with the operation of a hydrotherapy pool, the surrounding pool areas do not become significantly water saturated. Therefore it is recommended that the total wetted surface area be taken as the pool water surface area plus 10%. The inherent rate of water vapour evaporation from the surface of a hydrotherapy pool will be greater than that from a conventional swimming pool due to the comparatively higher pool water temperature. Consequently it is recommended that the mechanical ventilation to the hydrotherapy pool should be supplied at a total rate of 25 litres/second per square metre of total wetted surface area of which not less than approximately 20 per cent should be fresh air (see paragraph 6.35).

**6.39** The materials selected for the supply and extract ductwork and accessories for the hydrotherapy pool ventilation system must be suitable to endure the humid and chemically aggressive environmental conditions.

## Controls for general ventilation systems

**6.40** Supply and extract ventilation systems should include indicator lamps to confirm the operational status of each system. Where the use of the system is on a regular daily pattern, a time-switch control with manual override for a limited period should be considered. Where a system is provided for a particular space the indicator should be in or immediately adjacent to that space and local controls should be provided as appropriate. In the case of a more general system of ventilation, eg toilet areas, the indicator should preferably be located at a staff base. Where manual controls are available for staff use they should be provided with labels clearly defining their function.

**6.41** All primary heater battery coils and filters should be provided with frost protection.

## Controls for hydrotherapy suite ventilation system

**6.42** The supply and extract ventilations fans to the hydrotherapy pool hall should be interlocked so that the supply fan will not operate unless an air flow is established within the extract system.

**6.43** The supply and extract ventilation for the hydrotherapy suit should be time clock controlled to relate to the normal hours of the operations of the suite. A local override switch may be provided to permit staff to reactivate the plant on an extended day basis as required.

**6.44** Outside the normal hours of operation of the hydrotherapy suite, when the pool cover will be in place, the rate of evaporation from the pool surface will be greatly diminished but not completely eliminated. In order to prevent excessive condensation on the building fabric, especially glazing, the pool hall ventilation system should be provided with both a night set-back temperature control and a high humidity control. Either of these should override the time clock control and automatically operate the system for such periods as are necessary to restore the desired set-back conditions. The actual set-back levels will need to be ascertained by experiment to suit local site conditions but settings within a temperature range of 21 to 25°C and a relative humidity range of 60-75% are likely to be suitable.

**6.45** In order to assist the users with the day to day monitoring of the pool temperature and environmental conditions, consideration should be given to providing a remote indication panel, located in the pool hall, giving visual display of the pool water temperature and the pool hall air temperature and relative humidity.

## Plant rooms

**6.46** It is recommended that the pool water treatment and circulation plant be segregated in a separate enclosure from the pool hall ventilation equipment. These plant rooms can be located adjacent to each other or be a sub-division of a larger space but it is not necessary for them to be located at the same level. External access to these plant rooms is required for servicing and maintenance.

**6.47** It is normally preferable for the pool water plant room to be at ground or semi-basement level. The shape and relative height of the pool hall may permit the ventilation plant to be installed within a roof level plant or enclosure adjacent to the pool hall and such an arrangement could minimise the length of the ductwork routes to and from the pool hall and associated changing areas.

**6.48** Special provision must be made within the pool water plant room for the chemicals used for pool water treatment. Only chemicals for immediate use should be kept here. Separate bunded areas sited as far apart as possible should be provided for each of the chemicals so that they may be effectively segregated, retained and used in a safe manner. This is particularly important for sodium hypochlorite and acid reagents which react together to produce chlorine gas. To comply with Health and Safety recommendations an emergency "walk under" drench shower with eye wash provision should be provided within this plant room.

**6.49** Ventilation to the pool water treatment plant room will be required to relieve both the atmospheric contamination associated with the dispensing and/or possible accidental spillage of water treatment chemicals and excess temperature/high humidity which will arise from the plant operating conditions. Any local mechanical extract discharge arrangement should be located to avoid re-introduction of exhausted air into the building through air intakes and windows.

**6.50** A wash down and hose point should be provided for the dispersal of any chemical spillage and for general cleaning. This should be installed to comply with local water regulations, including the provision of suitable anti-contamination fittings.

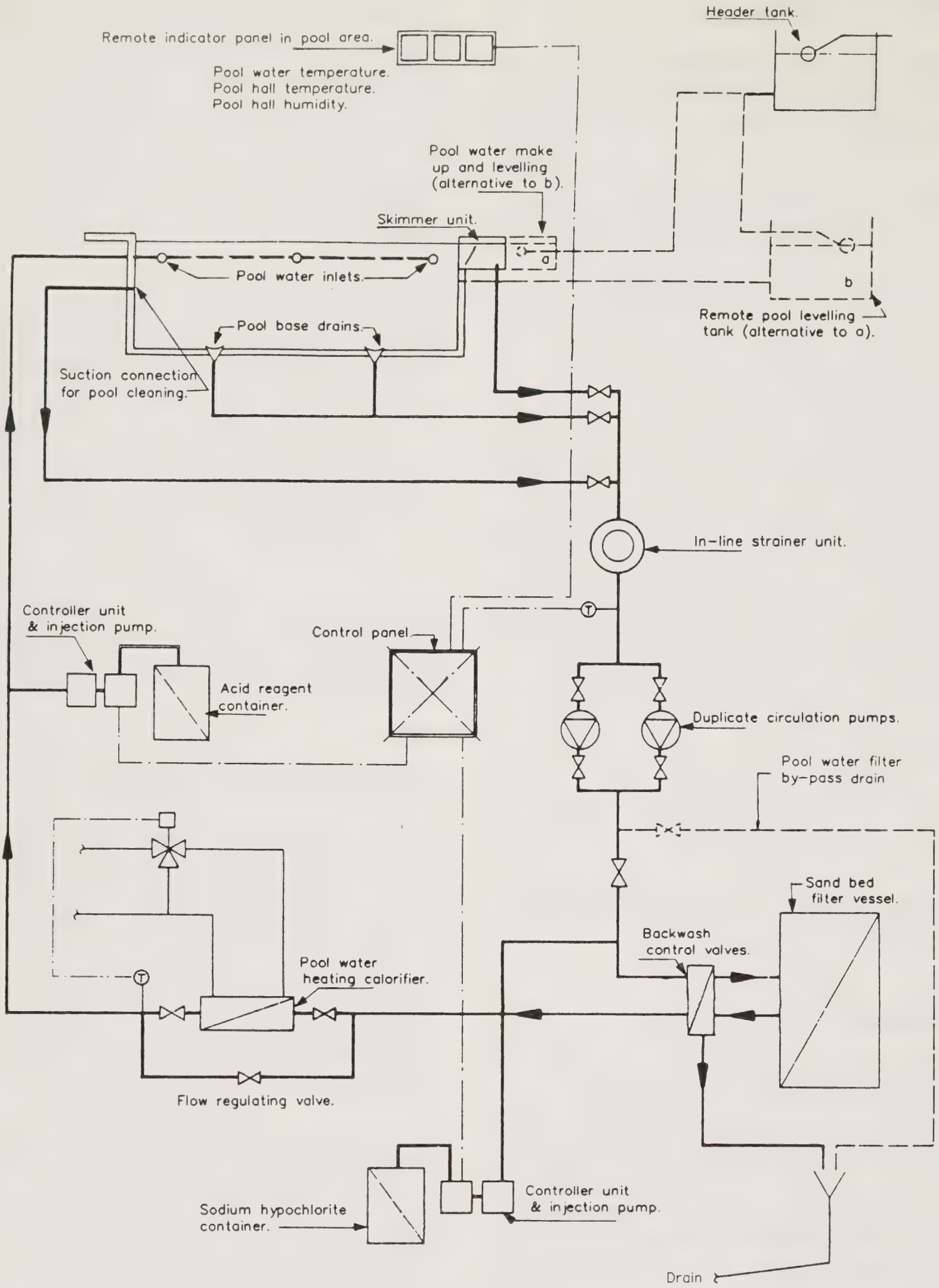
## Hot and cold water services

**6.51** The domestic hot water supply should be taken from the general hospital calorifier installation at an outflow temperature of 60°C ± 2.5°C, and distributed to all outlets so that the return temperature at the calorifier is not less than 50°C.

**6.52** A cold tap with hose connection should be provided for cleaning the hydrotherapy pool surrounds. This should be positioned so that it is not a hazard to patients and staff walking round the pool.

**6.53** Guidance concerning cold water supply pipework and distribution systems is given in HTM27[17]. For frost protection purposes and to prevent condensation staining decorative finishes, all cold water pipework valves and flanges should be insulated and vapour sealed.

**6.54** To control Legionellae, the water services should be designed, installed and commissioned in accordance with the recommendations in the DHSS Code of Practice[18]




TYPICAL SCHEMATIC ARRANGEMENT OF HYDROTHERAPY POOL WATER CIRCULATION SYSTEM

USING SODIUM HYPOCHLORITE AND ACID REAGENT FOR WATER TREATMENT

FIGURE No. 8

## Hydrotherapy pool water circulation system

**6.55** A typical schematic arrangement of the pool water circulation system is shown in Figure 8. The pool water is circulated from outlets in the base of the pool and from surface water skimmer box units through a filter and heat exchanger and returned to inlet valves near the surface of the pool. It is important that the outlets and inlet valves are so positioned to give an even distribution of water through the pool and minimise any "dead" zones.

**6.56** A single in-line strainer unit should be provided immediately prior to duplicate circulating pumps. Each pump should be sized for 100% duty and operated with one pump running and the other as standby. Automatic pump change over is not considered to be necessary. The pump performance characteristic should be selected so that the available head is compatible with the requirement for backwashing the filter as well as the circulation duty when the filter is offering maximum resistance immediately prior to backwashing.

**6.57** The filter should be of the pressure sand type complete with vent, pressure gauges for measuring inlet and outlets pressures, inlet and outlet water sampling points and a flow-rate indicator. It should be fitted with an appropriately sized multi-function and frontal pipe work assembly so that back washing utilises pool water to ensure disinfection of the filter media. For hydrotherapy pools, current practice suggests that filter flow rates in the range 17.5 to 20.5 $m^3/m^2$/hour will give an economic filter size selection.

**6.58** The heat exchanger, typically of internally corrosion protected steel or cast iron construction with a copper tube bundle, should be capable of maintaining the pool temperature at a selected operating point within the range of 34°C - 40°C. A control tolerance of ± 1°C should be achievable if electronic temperature sensors and controllers are used. The rate of change of the pool water temperature within this operating range must not exceed 2°C per hour. When bringing the pool up to operating conditions after a cold fill, the rate of temperature rise should be further restricted to a maximum of 1.5°C per hour. A manually operated regulating by-pass valve will be required to set the correct flow rate through the heat exchanger and a flow rate indicator should be provided for this purpose.

**6.59** A break tank should be provided for a pool water make up. In addition some form of automatic self levelling and make-up system will be required. This could be incorporated within the pool construction and skimmer unit, or alternatively, it could be provided by a remotely mounted balancing tank and interconnecting pipework. If this balancing tank is located within the pool water plant room it will provide a convenient point for maintenance staff to monitor pool water level.

**6.60** A separate outlet should be provided below normal water level, at a suitable position in the pool wall, connected via a manually operated shut-off valve to the strainer unit. This will permit portable fittings to be plugged-in for suction cleaning of the under water surfaces of the pool.

## Hydrotherapy pool water treatment plant

**6.61** Continuous disinfection of the hydrotherapy pool water is essential to control water quality within acceptable limits. Detailed guidance on the microbiological aspects of the health risks and the advantages and disadvantages of the various options for chemical dosing treatments are given in 'Hygiene for Hydrotherapy Pools', published by the Public Health Laboratory Service.[19]

**6.62** For the purpose of this Note and its cost allowances it is assumed that water treatment will be achieved by a system of automatic dosing with sodium hypochlorite for disinfection in conjunction with automatic dosing of an acid reagent for pH control. Typical acceptable pool water conditions are a free chlorine in the range 1.5 - 3.0 mg/litre and pH in the range 7.2 - 7.8 (probable optimum range 7.4 - 7.6).

**6.63** It is recommended that the treatment chemicals be injected directly into the pool circulation pipework. It is essential to have substantial separation between the two injection positions. Typically, the sodium hypochlorite would be injected before the filter unit and the acid reagent would be injected after the heating calorifier.

**6.64** Each injection pump should be of the positive displacement type and be fitted with stroke and frequency control. They may conveniently be wall mounted above the chemical containers (typically 25 litres capacity) positioned within their bunded areas. It is recommended that dosing lines be of high pressure polyethylene encased in a safety threader pipe between the pumps and the dosing injectors. The injectors should be constructed from materials suitable for the chemical and temperature conditions (typically PVC) and should be fitted with a withdrawable quill and isolating cock.

**6.65** The injection pumps should be automatically controlled, preferably using an electronic control system which responds to the free chlorine level in the pool. The controls should continuously monitor and display the pH and total chlorine level and should also incorporate features to vary the required set-point and compensate for variation in pool water temperature. In addition, the injection pumps should be interlocked with the pool water circulation to prevent the continuation of dosing should there be a cessation or substantial reduction of flow. This interlocking system should be designed to "fail safe".

**6.66** The sampling chambers should be of a construction suitable for operating at the elevated pool water temperature and have removable sampling bowls. The outlets from the sampling chambers should be valved and may be returned to the remote balancing tank, if this is provided or, alternatively, run to a drain.

**6.67** In addition to the above fixed equipment, a pool water test kit should be provided which is suitable for manually sampling and testing the pool water for residual free chlorine, pH level, alkalinity and hardness.

## Patient hoist for hydrotherapy pool

**6.68** A power-operated patient hoist, traversing over the pool, will be required. The hoist should give smooth lifting, lowering and automatic braking action and have upper and lower limit safety stops. The upper limit stop must ensure the safety of sitting patients. The lifting speed should not exceed 0.05m per second. The power unit and control gear must be totally enclosed and suitable for long periods of trouble-free operation in the humid, corrosive pool atmosphere. All moving parts of the hoisting unit must be protected from the reach of the patient.

**6.69** The hoist may be electrically or hydraulically operated and may either be suspended and operate along an overhead beam or be floor mounted. Electrically-operated hoists on overhead beams and floor-mounted hydraulic hoists have both proved satisfactory.

**6.70** The track, trolley, slings, spreader bars, harness and other parts of the hoisting assembly must be designed for a long trouble-free life and particular care must be taken in the design and construction of the stitchings and fastening of those parts of the assembly which will be subject to immersion in the pool. All nuts should either be fitted with lock nuts or lock washers, or incorrodible self-locking nuts may be used.

**6.71** If the hoist is electrically operated, special precautions are required to protect the patient and operating staff against the danger of electric shock. The hoist track must be permanently bonded to earth, the lifting rope should be of non-hygroscopic insulating material, eg nylon, and means should be provided to protect any flexible electric cables on the unit from damage.

The motor may operate:

either a. direct off single-phase or 3-phase mains, in which case the motorised trolley must be earthed and an earth-proving device must be installed.

or b. at 240 volts single-phase, fed by 1:1 safety isolating transformer constructed as described in BS 3535[20] and having a 1mA earth-leakage trip connected between the centre tap and earth.

or c. at 110 volts, fed from a transformer constructed as described in BS 3535[20] and having its centre point on the 110 volt side permanently bonded to earth.

Any transformer or earth-proving units should preferably be located outside the pool hall.

**6.72** The controls should preferably be operated by pull cords of non-hygroscopic insulating material, or may be electrically operated at a safety extra-low voltage (SELV) not exceeding 12v (RMS) using an earth free source and circuits with comply with the relevant IEE Regulations for Electrical Installations[21].

**6.73** An independent emergency stop control should be provided. This should operate a separate isolator which disconnects all phase and neutral conductors of the supply to the hoist motor and starter. It should be located in a position convenient to the operator and should be cord-operated and distinctly coloured and marked. Hand re-setting will be necessary.

**6.74** Hydraulic hoists are usually water operated and will require the provision of appropriate foundations for the hoist and hydraulic rams assembly, a hydraulic power supply unit (which may be remotely mounted) and associated interconnecting pipework and discharge drainage. If the hydraulic power supply unit is integral with the hoist, its electrical equipment and controls should comply with the safety features described in paragraphs 6.71 and 6.72. A hydraulic hoist with remotely mounted hydraulic power unit will avoid the need for special poolside electrical safety circuits and equipment. The cost allowance assumes that this option will be provided.

## Piped oxygen and medical vacuum (optional services)

**6.75** An oxygen supply and medical vacuum are required in the individual physiotherapy treatment room (see paragraph 4.39). Rather than use portable apparatus it may be preferable to have permanent services from the hospital medical gases installations, if these are conveniently available nearby, thus permitting economic connections to be made. Guidance regarding medical gases installations and terminal outlets is given in HTM22[22] and any subsequent published amendments.

# ELECTRICAL SERVICES

## Introduction

**6.76** The electrical installation will include main intake switchgear and wiring and equipment for lighting, power, call systems, clocks, environmental plant and earth bonding of extraneous metal work. Extensions from central systems for telephones, fire alarms and staff location/call services, will also be required. These installations should comply in all respects with the current IEE Regulations for Electrical Installations [21] and conform to the requirements of HTM7[23].

**6.77** Reference should be made to the Activity Data Sheets for the recommended levels of internal illumination, disposition of outlets for power, telephones, call systems and clocks etc in individual spaces.

**6.78** The point of entry for the electrical supply will be a departmental switchroom housing the main isolators and the main distribution equipment. The switchroom will also be the distribution centre for subsidiary electrical services and apparatus. All equipment should be mounted at a height to give easy access from a standing position. Switchrooms should be positioned so as to minimise the cost of cabling required to serve the department. In practice the electrical switchroom for the hydrotherapy suite will usually be adjacent to the hydrotherapy pool plant rooms described in paragraphs 6.46 and 6.47.

## Electrical installations

**6.79** The electrical installation in occupied areas should be concealed using PVC insulated cable in screwed steel conduit or trunking but, in certain circumstances, mineral insulated copper covered cables may be necessary. External installations should comprise PVC insulated cables in galvanised screwed steel conduit with fittings of weatherproof pattern. Steel conduit and trunking wiring ways for communication and data systems should also be concealed wherever possible. Within the hydrotherapy pool area and associated water treatment plant room, any exposed services should be of PVC or similar finish to avoid corrosion by the humid and chemically aggressive atmospheric conditions. Mineral insulated PVC sheathed cables may be used.

## Electrical interference

**6.80** Guidance concerning the avoidance and abatement of electrical interference is given in HMT14[24] and fluorescent luminaires (lighting fittings) should comply with BS5394[25].

**6.81** Care should be taken to avoid mains borne interference and electrical radio frequency interference affecting computers and other electronic equipment used here or elsewhere on a hospital site (see also paragraphs 3.26-3.29).

## Lighting

**6.82** Practical methods of lighting the various functional spaces are contained in the CIBSE Lighting Guide LG2[26]. The choice of luminaire should take account not only of the requirement of light distribution and visual comfort appropriate to the space, but also the operating efficiency of the light source used. Luminaires should be of types which are easily cleaned and maintained and are manufactured and tested in accordance with the requirements specified in the relevant sections of BS 4533[27]. Their location should be readily accessible for lamp changing and maintenance, but with the overriding requirement that the recommended standard of illuminance is provided to the task areas. Luminaires using fluorescent lamps should be installed when artificial lighting is required for long periods or where areas are devoid of natural light. Intermittently used luminaires may be fitted with incandescent or compact fluorescent lamps.

**6.83** Control of lighting is normally by local switches and these should be provided in sufficient numbers to allow variation in lighting options, eg reduced levels of illuminance when circumstances permit, and to encourage energy conservation. Dimmable lighting controlled by electronic dimmers should be provided only where indicated on the Activity Data Sheets.

**6.84** In the hydrotherapy pool area, the general lighting luminaires should be splash-proof (IP54 degree or protection as classified in BS5490 [28]) and made from a non-corrosive material such as PVC. Consideration should be given to maintenance with, ideally, no luminaires positioned immediately over the pool itself. With a high ceiling level in the pool hall, wall mounted luminaires is one option but care should be taken to avoid problems with glare. This could be alleviated by uplighting but, to achieve the required illumination levels, this may involve having to use flood lights as uplighters.

**6.85** Within the physiotherapy activity area with high ceilings, consideration again should be given to using wall mounted luminaires to provide convenient access for maintenance. These luminaires should be manufactured from materials having good resistance to impact damage.

**6.86** Within the occupational therapy activity areas fluorescent lighting should generally be provided and be circuited to avoid stroboscopic effects where rotating machinery is used. Ceiling mounted luminaires positioned

above work benches and equipment are preferable to portable lamps for task lighting. When maximum flexibility of use is required, such as in the light activities area, it may be advantageous to install ceiling mounted power track. This will allow task lighting and power supplies for portable therapy equipment to be directly accessible without the hazard of trailing cables and has the potential for changing lighting patterns to suit other group activities.

**6.87** The lighting of corridor, stairways and other circulation areas, which generally are areas not covered by Activity Data Sheets, should be in accordance with the guidance contained in HBN 40- 'Common Activity Spaces Volume 2 Corridors' [29] and 'Volume 3 Lifts and Stairways'[30].

**6.88** In areas where computer terminals are to be used, the lighting should be designed to avoid bright reflections on the screen and to ensure that the contents of the screen are legible. Further guidance can be found in the CIBSE Lighting Guide LG3[31].

## General purpose socket-outlets and power connections

**6.89** Sufficient 13 amp switched, shuttered socket-outlets, connected to ring or spur circuits should be provided to allow all portable appliances likely to be used simultaneously to be individually supplied. Activity Data Sheets indicate specific locations for the outlets associated with individual activities; the installation of twin outlets should be considered where the activities are in juxtaposition.

**6.90** Domestic cleaning appliances with flexible leads nine metres long should be assumed and switched, single socket-outlets, usually in corridors, should be provided to enable such machines to operate over the whole area of the department.

**6.91** Fixed appliances rated up to 13 amps should be permanently connected to double pole switched spur boxes and fused as required. Appliances rated in excess of this load, or those requiring a three-phase supply, should be permanently connected to separate final circuits from fuse-boards and independently switched.

**6.92** Local switches or other means of electrical isolation should be provided adjacent to plant and equipment to ensure the safety of operators and maintenance staff.

**6.93** A master control switch or stop button, for emergency isolation of all electrical circuits supplying power driven machinery, should be located in a prominent position and clearly identified in each therapy activity area.

**6.94** Heating appliances and automatically operated equipment should be provided with indicator lights to show when the equipment is energised. Such indicators should be incorporated either in the control panel of the apparatus, in the control switch, or in the outlet from which the apparatus derives its supply.

**6.95** The electrical supply connections to electro-medical equipment should comply with BS5724[32]. The use of mains operated mobile x-ray equipment will not normally be required in this accommodation.

## Socket-outlets and floor cleaning equipment in the hydrotherapy pool hall

**6.96** Socket-outlets will usually be required within the hydrotherapy pool hall for floor cleaning machines. These should be sited at least 2.0m, and preferably 3.5m, away from the edges of the pool water surface and should comply with IP56 degree of protection, as classified in BS5490[28]. They should be connected via an integral or adjacent residual current protective device complying with BS4293[33] having a residual operating current not exceeding 30mA.

**6.97** As a further safety precaution all 240V floor cleaning equipment should be fitted with a restraining lanyard, sliding along a secure wire fixed to the pool structure, of a length permitting operation of the equipment but short enough to prevent it falling into the pool.

## Power connection for pool counter-current unit (optional facility)

**6.98** If a counter-current unit is to be provided (see paragraph 4.61) it should be connected via an appropriately rated residual current protective device having a residual operating current not exceeding 30mA. The electrical controls, which may be incorporated within the unit assembly, should be of a type which provides at least IP44 degree of protection, as classified in BS5490[28], and also protects the operating staff against the danger of electrical shock. They may be pneumatically operated or electrically operated at a safety extra low voltage (SELV) not exceeding 12v. (RMS) using an earth free source and circuits which comply with the relevant IEE Regulations for Electrical Installations.[21]

## Emergency electrical supplies

**6.99** Guidance concerning the provision of emergency

electrical supplies is given in HTM 11[34] and the grade of standby lighting provision is shown on the Activity Data A-Sheets. Safety lighting in accordance with HTM 11[34] and BS5266[35] should be provided on primary escape routes.

## Staff location system

**6.100** The staff location system employed for the hospital should be extended to give cover to this department. Guidance on these systems is given in HTM20[36].

## Call systems

**6.101** Patient/staff call points should be provided in all patient toilets, treatment and changing/rest rooms. Each call unit should comprise a push button or pull cord, reassurance lamp and reset switch.

**6.102** Staff/staff (emergency) call points should be provided in all assisted patient toilets, changing rooms ADL rooms, activity areas and the hydrotherapy pool hall. Call units should generally comprise a switch (pull to call, push to reset) and reassurance lamp but pull cord operated call units should be provided in the hydrotherapy pool hall which are readily accessible to a therapist both in the pool and on its surround.

**6.103** A visual and audible indication of operation should be provided at a suitable staff base or at reception to give responding staff unambiguous identification of the call type and source. The staff/staff emergency alarm from the hydrotherapy pool hall must be distinctive and should be audible throughout the department to ensure prompt assistance from other staff irrespective of their immediate location. The audible alarm signal initiated by patients should operate for one second at ten second intervals until cancelled with corresponding lamps lit continuously. The audible alarm signal initiated by staff should operate intermittently at half second intervals with corresponding lamps flashing on and off at the same rate.

**6.104** Hospital operational policies may also require that a staff/staff emergency alarm be transferred to a centrally manned point.

## Telephones

**6.105** Central telephone facilities, for internal and external calls, will normally be available and should be extended to serve this department in accordance with the requirements shown on the Activity Data Sheets. Telephones will normally be of desk pattern.

**6.106** Guidance concerning the provision of telephone systems and equipment, including the telephone internal cabling distribution and telephone hand sets, is given in HBN 48[37]. This includes guidance on hand sets for use in rehabilitation departments which utilise equipment emitting very high levels of radio frequency radiation.

**6.107** A telephone system served by modern electronic exchange equipment should normally meet all internal communication requirements in this accommodation. If project teams consider that their own operational policies may be better served by a local intercommunication system within this department, then care must be taken to restrict correspondingly the number of telephones provided. Additional costs are likely to be incurred if this alternative approach is selected.

**6.108** Approved telephone outlets for use with a payphone may be provided in waiting areas where patients can use a telephone with reasonable privacy, if this facility is not conveniently located elsewhere (for example, in the main entrance to the hospital). If provided, all such payphones should be connected directly to the public network by separate exchange circuits and not routed via the hospital switchboard. They should also have their mode of operation restricted to making outgoing calls only. To assist patients with impaired hearing, the hand set earpiece should be fitted with an inductive coupler suitable for use with hearing aids. In addition, consideration should be given to mounting at least one payphone at a height convenient for a wheelchair user.

## Wireways for data links

**6.109** Wireways, which should be segregated from electrical power and telephone cabling distribution systems, will usually be required for computer links between the main hospital computer system and the enquiry and reception desks. There may also be a requirement for data links to other staff work stations, depending on the local policy for automatic data processing.

## Electric clocks

**6.110** Clocks should operate in conjunction with a master clock system. If such a system is not available synchronous clocks should be installed using a common clock circuit suitable for future connection to a master system. The location and types of clocks are indicated on the Activity Data A- Sheets. In circulation areas, clocks should be installed only where they can be viewed by staff, patients and visitors.

## Lightning protection

**6.111** Protection against lightning should be provided in accordance with HTM7[23], Engineering Data Sheet DB2[38] and BS 6551[39].

## INTERNAL DRAINAGE

**6.112** The primary objective is to provide an internal drainage system that uses the minimum of pipework and remains water-and air-tight at joints and connections, but is sufficiently ventilated to retain the integrity of water seals.

## Design parameters

**6.113** General design guidance is given in the relevant British Standards and Codes of Practice including BS 5572[40], and the current Building Regulations [2]. Recommendations regarding spatial and access requirements for public health engineering services are given in Engineering Data Sheet EA5[41].

**6.114** The gradient of branch drains should be uniform and adequate to convey the maximum discharge to the stack without blockage. Practical considerations such as available angles of bends/junctions and their assembly, as well as space considerations, usually limit the minimum gradient to about 1:50 (20 mm/m). For the larger pipes, eg 100mm diameter, flatter gradients can be used but require workmanship of a high standard if adequate self-cleansing flow is to be maintained. It is envisaged that pipes larger than 100 mm diameter will not normally be required within the drainage system serving this department. However, depending on local circumstances, special consideration may have to be given to the size of the drainage connection from the hydrotherapy pool to deal with the flow rates associated with filter backwashing and pool emptying.

## Operational considerations

**6.115** Unusual and difficult maintenance problems can arise because of user interference and abuse. For example, the disposal of paper towels into WCs after hand-washing, or after their misuse for some other purpose, is a frequent cause of blockages particularly in long branches laid to flat gradients. Adequate provision of disposal receptacles or, where appropriate, the installation of warm-air dryers can help to mitigate this problem.

## Materials specification

**6.116** The materials specified for the drainage system in this accommodation will depend upon their location and the nature of the effluent being discharged. Waste pipework should, as far as practicable, be concealed; where exposed, it should be metallic and very securely fixed. Although adequate for the drainage requirements UPVC may not always be acceptable to the fire officer and it should not be installed above "sensitive" areas, eg switchrooms or catering departments.

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# 7.0 Cost information

## Introduction

**7.1** The practical implications of the guidance in this Note have been described and realised in the Activity Data sheets and neutral room layouts which have been used in drawing up exemplar plans. Cost allowances have been calculated using information extracted from this data.

**7.2** Project teams are reminded that all activities should be carefully considered so that, where appropriate, space can be used for other activities taking place at different times.

## Works costs

**7.3** The cost allowances cover the building and engineering requirements set out in this Note. They assume that the department will form part of a whole hospital, a centralised staff changing system will be employed and that catering will be provided elsewhere. Each of the functions is given separately in order to facilitate the calculation of the total size of the department. It is not expected that any of the functions, with the exception of the hydrotherapy suite, will be built alone, but that they will form a comprehensive service at each location. However, the possibility of building less than a full service has not been eliminated. The hydrotherapy suite may be required to be built as an addition to an existing department. Cost allowances for outdoor activities (see paragraph 4.28) are dealt with in HBN-45 'External Works for Health Buildings' (in preparation). Where direct external entry to the rehabilitation department is necessary (see paragraphs 3.8 - 3.10), cost guidance will be found in HBN 51 Supplement 1- 'Miscellaneous Spaces in a District General Hospital'.

**7.4** The functional units for this service, generally expressed as the maximum number of patients able to be present at any one time (see paragraph 2.22), are as follows:

a. **Departmental accommodation**:

   (i) Small unit;

   (ii) Large unit;

b. **Physiotherapy section**

   (i) 40 Patients;

   (ii) 60 Patients;

c. **Hydrotherapy suite**.

d. **Occupational therapy section**;

   (i) 19 Patients;

   (ii) 33 Patients;

e. **Speech therapy section**;

   (i) 9 Patients;

   (ii) 18 Patients;

**7.5** The "Departmental Accommodation" is not intended to have the status of a functional unit, but will in all cases be required in conjunction with the other sections. Adjustment of this accommodation is not envisaged, but that one of the defined units will usually be chosen according to the scale of provision of the other sections.

**7.6** The total cost allowance for a scheme is derived by aggregating the cost of the functional units, Essential Complementary Accommodation and Optional Accommodation and Services as appropriate to the particular scheme.

## Essential Complementary Accommodation (ECA)

**7.7** This comprises activity spaces which are essential to the provision of therapy services but which are not included in the functional unit costs. The ECA costed in this Note are:

Splint preparation
Assessment wheelchair store

## Optional Accommodation and Services (OAS)

**7.8** This Note, where appropriate, draws attention to alternative ways of providing services or facilities, including the likely cost implications. This information will enable project teams to select the solution which is most suitable to their needs. The OAS covered in this Note are:

Consultant's office
Consultant's C/E room
District officer's office
Secretarial offices
Physiotherapy for ward areas
Occupational therapy for ward areas

Decentralised staff changing
ADL bedroom
ADL utility/laundry
Children's therapy area
Sub-waiting
Pool counter-current unit
Piped oxygen and medical vacuum

## Dimensions and areas

**7.9** In determining spatial requirements, the essential factor is not the total area provided but the critical dimensions, i.e. those dimensions critical to the efficient functioning of the activities being carried out. There are therefore no recommended areas associated with this Note.

**7.10** At the early stages of a project, designers should have data available which enables them to make an approximate assessment of the sizes involved. Schedules of Accommodation are provided at the end of this Chapter. It is emphasised that the areas published **do not** represent recommended room sizes, maximum or minimum allowances or specific individual entitlements. Project teams are referred to the ergonomic diagrams in Health Building Note 40 – 'Common Activity Spaces Volumes 1 to 4'.

## Circulation spaces

**7.11** Space for circulation, which includes allowances for planning provision, a heating and ventilating zone adjacent to the external walls, small vertical ducts and partitions, is shown in the Schedules of Accommodation and included in the cost allowances.

## Communications space

**7.12** Staircases, lifts and plant rooms, with the exception of electrical switch cupboards and water treatment and ventilation plant rooms in the hydrotherapy suite, are not included in the cost allowances.

## Engineering services

**7.13** The following engineering services, as described in Chapter 6, and exemplified in the Activity Data, are included in the cost allowances. Primary engineering services are assumed to be conveniently available at the boundary of the department.

a. **Mechanical services**

Heating: Low pressure hot water system, maximum surface temperature generally 82°C.

Ventilation: Mechanical supply and extract ventilation systems for the hydrotherapy suite (including dedicated ventilation plant with energy recovery); mechanical ventilation systems for the treatment, preparation, physiotherapy activity and ADL areas to meet functional requirements; other areas will be mainly naturally ventilated.

Hydrotherapy pool water circulation: Complete system including pumps, pipework, strainer, filter with backwash control valve, heating calorifier, balancing and make-up tanks, skimmer units and other pool fittings, together with automatic chemical water treatment equipment utilising sodium hypochlorite and acid reagent.

Cold water service: Centrally supplied to service points including drinking water, fire hose reels and a filling and make-up supply to the hydrotherapy pool. Storage tanks excluded except those associated with the hydrotherapy pool water circulation system.

Hot water service: Centrally supplied at 60°C, storage excluded.

b. **Electrical services**

Departmental distribution switchboard.

General lighting as required by tasks.
Fluorescent, tungsten, safe light and emergency luminaires as appropriate.

Socket-outlets and other power outlets for fixed and portable equipment. Safety isolation of power supplies in therapy activity areas included.

Power supplies to hydrotherapy pool water circulating and ventilation plants together with associated controls and wiring.

Supplementary equipotential earth bonding connections.

Standby and safety installations from the main hospital supplies.

Patient/staff and staff/staff emergency call system.

Fire alarm system.

Impulse clocks.

Staff location – extension to the hospital system.

Telephone internal distribution cabling and outlets. Handsets excluded.

Data transmission – wireways only.

c. **Equipment (Group 1)**

Electrically operated patient hoist in ADL Bedroom.
Electrically operated patient hoist in ADL Bathroom.
Hydraulically operated patient hoist (with stretcher and chair attachments) for hydrotherapy pool.
Illuminated x-ray viewers in staff and seminar rooms.

# Schedules of accommodation

## Departmental accommodation

| Para no. | Activity Space | Space area sq.m. | Small size Qty. | Small size Total area sq.m. | Large size Qty. | Large size Total area sq.m. |
|---|---|---|---|---|---|---|
| *Staff areas* | | | | | | |
| 4.4 | Reception/Records | 9.00 | 1.0 | 9.00 | | |
| | | 12.00 | | | 1.0 | 12.00 |
| 4.9 | Secretarial staff | 9.00 | 1.0 | 9.00 | | |
| | | 13.00 | | | 1.0 | 13.00 |
| 4.10 | Seminar Room – 12 persons | 22.00 | 1.0 | 22.00 | | |
| | – 25 persons | 45.00 | | | 1.0 | 45.00 |
| 4.11 | Staff Room – 12 persons | 21.00 | 1.0 | 21.00 | | |
| | – 20 persons | 32.00 | | | 1.0 | 32.00 |
| 4.14 | Locker Room – 32 lockers | 15.00 | 1.0 | 15.00 | | |
| | – 52 lockers | 25.00 | | | 1.0 | 25.00 |
| 4.15 | WC/Wash | 2.00 | 2.0 | 4.00 | 2.0 | 4.00 |
| *Patients' areas* | | | | | | |
| 4.6 | Main Waiting – 12 patients | 23.00 | 1.0 | 23.00 | | |
| | – 20 patients | 35.00 | | | 1.0 | 35.00 |
| 4.21 | Assessment/Quiet interview room | 10.00 | 1.0 | 10.00 | 1.0 | 10.00 |
| 4.16 | Wchr. WC/Wash | 4.50 | 2.0 | 9.00 | 2.0 | 9.00 |
| | Wchr. WC/Wash (Dual access) | 5.50 | 1.0 | 5.50 | 2.0 | 11.00 |
| *Utilities and stores* | | | | | | |
| 4.25 | Cleaner's space | 7.00 | 1.0 | 7.00 | 1.0 | 7.00 |
| 4.26 | Disposal room | 2.00 | 1.0 | 2.00 | 1.0 | 2.00 |
| 4.27 | Electrical switchgear | 2.00 | 1.0 | 2.00 | 1.0 | 2.00 |
| | Nett total | | | 138.50 | | 207.00 |
| | Circulation etc. | | | 43.00 | | 64.50 |
| | **Totals** | | | **181.50** | | **271.50** |
| | Departmental Areas | | | 180 sq.m. | | 270 sq.m. |

## Physiotherapy section

| Para no. | Activity Space | Space area sq.m. | 40 patients Qty. | 40 patients Total area sq.m. | 60 patients Qty. | 60 patients Total area sq.m. |
|---|---|---|---|---|---|---|
| *Staff areas* | | | | | | |
| 4.30 | Superintendent physiotherapist | 10.00 | 1.0 | 10.00 | 1.0 | 10.00 |
| 4.31 | Staff Office – 6 persons | 20.00 | 1.0 | 20.00 | | |
| | – 10 persons | 32.00 | | | 1.0 | 32.00 |
| 4.41 | Staff base | 8.50 | 1.0 | 8.50 | 1.0 | 8.50 |
| *Patient's areas* | | | | | | |
| 4.17 | Patient's changing – 6 places | 11.00 | 2.0 | 22.00 | | |
| | – 10 places | 15.50 | | | 2.0 | 31.00 |
| 4.16 | Wchr. WC Wash | 4.50 | | | 1.0 | 4.50 |
| | Wchrr. WC Wash (dual access) | 5.50 | 1.0 | 5.50 | 1.0 | 5.50 |
| 4.32 | Activity area – combined | 160.00 | 1.0 | 160.00 | | |
| | – small | 80.00 | | | 1.0 | 80.00 |
| | – large | 120.00 | | | 1.0 | 120.00 |
| 4.36 | Treatment – 10 cubicles | 100.00 | 1.0 | 100.00 | | |
| 4.36 | –14 cubicles | 140.00 | | | 1.0 | 140.00 |
| 4.39 | –individual room | 12.00 | | | 1.0 | 12.00 |
| 4.39 | –individual room (UVL) | 12.00 | 1.0 | 12.00 | 1.0 | 12.00 |
| 4.40 | –wax and ice | 16.00 | 1.0 | 16.00 | 1.0 | 16.00 |
| *Utilities and stores* | | | | | | |
| 4.43 | Storage – general | 6.00 | 1.0 | 6.00 | | |
| | – general | 16.00 | | | 1.0 | 16.00 |
| | – activity area (small) | 6.00 | 1.0 | 6.00 | 1.0 | 6.00 |
| | – activity area (large) | 10.50 | 1.0 | 10.50 | 1.0 | 10.50 |
| | – cubicles | 6.00 | 1.0 | 6.00 | 1.0 | 6.00 |
| 4.22 | – linen store | 3.00 | 1.0 | 3.00 | 1.0 | 3.00 |
| | Nett total | | | 385.50 | | 513.00 |
| | Circulation etc. | | | 120.50 | | 160.50 |
| | **Totals** | | | **506.00** | | **673.50** |
| | Departmental Areas | | | 505 sq.m. | | 675 sq.m. |

## Hydrotherapy suite

| Para no. | Activity Space | Space area sq.m. | Qty. | Total area sq.m. |
|---|---|---|---|---|
| *Entrance* | | | | |
| 4.46 | Staff base | 8.50 | 1.0 | 8.50 |
| | Sub-waiting | 3.00 | 1.0 | 3.00 |
| | Trolley/Wchr. transfer area | 6.00 | 1.0 | 6.00 |
| | Trolley/Wchr. parking | 5.00 | 1.0 | 5.00 |
| 4.63 | Patients/Staff changing | 16.00 | 1.0 | 16.00 |
| 4.65 | Showers – ambulant | 2.50 | 1.0 | 2.50 |
| | – trolley access | 10.50 | 1.0 | 10.50 |
| 4.66 | WC – semi-ambulant patient | 4.50 | 1.0 | 4.50 |
| 4.66 | Assisted WC (dual access) | 5.50 | 1.0 | 5.50 |
| 4.47 | Pool hall | 92.50 | 1.0 | 92.50 |
| 4.64 | Patients rest area | 25.00 | 1.0 | 25.00 |
| *Utilities and stores* | | | | |
| 4.67 | Laundry/Utility room | 18.50 | 1.0 | 18.50 |
| 4.68 | Equipment store/Cleaner's bay | 5.50 | 1.0 | 5.50 |
| 4.69 | Plant rooms – Pool circulation | 18.00 | 1.0 | 18.00 |
| | Pool ventilation | 20.00 | 1.0 | 20.00 |
| | Nett total | | | 241.00 |
| | Circulation etc. | | | 45.00 |
| | **Gross total** | | | **286.00** |
| | Departmental Area | | | 285 sq.m. |

## Occupational therapy section

| Para no. | Activity Space | Space area sq.m. | 19 Patients Qty. | 19 Patients Total area sq.m. | 33 Patients Qty. | 33 Patients Total area sq.m. |
|---|---|---|---|---|---|---|
| *Staff areas* | | | | | | |
| 4.70 | Head occupational therapist | 10.00 | 1.0 | 10.00 | 1.0 | 10.00 |
| 4.71 | Staff office – 6 persons | 20.00 | 1.0 | 20.00 | | |
| | – 10 persons | 32.00 | | | 1.0 | 32.00 |
| *Patients areas* | | | | | | |
| 4.72 | Activity area – combined | 90.00 | 1.0 | 90.00 | | |
| 4.73 | – light | 110.00 | | | 1.0 | 110.00 |
| 4.77 | – heavy | 90.00 | | | 1.0 | 90.00 |
| 4.16 | Wchr. WC/Wash (dual access) | 5.50 | | | 1.0 | 90.00 |
| 4.89 | ADL – bedroom | 15.00 | 1.0 | 15.00 | 1.0 | 15.00 |
| 4.90 | – bathroom/shower | 12.00 | 1.0 | 12.00 | 1.00 | 12.00 |
| 4.93 | – kitchen | 22.00 | 1.0 | 22.00 | 1.0 | 22.00 |
| *Utilities and stores* | | | | | | |
| 4.82 | Timber and metal store | 17.00 | 1.0 | 17.00 | 1.0 | 17.00 |
| 4.83 | On-going work store | 6.50 | 1.0 | 6.50 | 2.00 | 13.00 |
| 4.84 | Materials/Equipment store | 20.00 | 1.0 | 20.00 | 1.0 | 20.00 |
| 4.85 | Community disability equipment store | 20.50 | 1.0 | 20.50 | 1.0 | 20.50 |
| | Nett total | | | 233.00 | | 367.00 |
| | Circulation etc. | 73.00 | | | | 114.50 |
| | **Totals** | **306.00** | | | | **481.50** |
| | Departmental Areas | 305 sq.m. | | | | 480 sq.m. |

## Speech therapy section

| Para no. | Activity Space | Space area sq.m. | 9 Patients Qty. | 9 Patients Total area sq.m. | 18 Patients Qty. | 18 Patients Total area sq.m. |
|---|---|---|---|---|---|---|
| *Staff areas* | | | | | | |
| 4.96 | Chief ST's office | 10.00 | 1.0 | 10.00 | 1.0 | 10.00 |
| 4.97 | Staff office/Individual treatment | 20.00 | 1.0 | 20.00 | | |
| 4.97 | Staff office – 4 persons | 21.00 | | | 1.0 | 21.00 |
| 4.100 | Viewing room | 5.00 | 1.0 | 5.00 | 1.0 | 5.00 |
| *Patients areas* | | | | | | |
| 4.98 | Individual treatment room | 14.50 | | | 2.0 | 29.00 |
| 4.99 | Group treatment room | 24.50 | 1.0 | 24.50 | 2.0 | 49.00 |
| *Utilities and stores* | | | | | | |
| 4.101 | Equipment store | 5.00 | 1.0 | 5.00 | 1.0 | 5.00 |
| | Nett total | | | 64.50 | | 119.00 |
| | Circulation etc. | | | 20.00 | | 37.00 |
| | **Totals** | | | **84.50** | | **156.00** |
| | Departmental Areas | | | 85 sq.m. | | 155 sq.m. |

## Essential Complementary Accommodation

| Para no. | Activity Space | Space area sq.m. | Circn. etc. sq.m. | Total area sq.m. |
|---|---|---|---|---|
| 4.19 | Splint preparation | 19.00 | 6.00 | 25.00 |
| 4.86 | Assessment wheelchair store | 6.00 | 2.00 | 8.00 |

## Optional Accommodation and Services

| Para no. | Activity Space | Space area sq.m. | Circn. etc. sq.m. | Total area sq.m. |
|---|---|---|---|---|
| 4.8 | Consultant's office | 10.00 | 3.00 | 13.00 |
| | Consultant's C/E room | 15.50 | 5.00 | 20.50 |
| 4.29 | District therapist's office | 10.00 | 3.00 | 13.00 |
| 4.8 & | Secretarial office – 1 secretary | 9.00 | 3.00 | 12.00 |
| 4.29 | – 2 secretaries | 15.00 | 4.50 | 19.50 |
| 4.44 | Physiotherapy for ward areas | | | |
| 4.87 | Occupational therapy for ward areas | 30.00 | 9.50 | 39.50 |
| 4.12 & | Decentralised staff changing – male | 8.00 | 2.50 | 10.50 |
| 4.62 | – female | 12.00 | 4.00 | 16.00 |
| 4.89 | ADL – bedroom | 15.00 | 4.50 | 19.50 |
| 4.95 | – utility/laundry | 11.00 | 3.50 | 14.50 |
| 4.23 | Children's therapy area – individual | | | |
| | – group | 56.50 | 17.50 | 74.00 |
| 4.42 & | Sub-waiting | 6.00 | 2.00 | 8.00 |
| 4.102 | | | | |
| 4.61 | Pool counter-current unit | Nil | | |
| 4.39 | Piped oxygen and medical vacuum | Nil | | |

# 8.0 Activity Data

## General

**8.1** "Activity Data" is an information system developed to help project and design teams by defining the users' needs more precisely. This information constitutes the computerised Activity Data Base, first issued to Health Authorities in England and to the Health Departments in Scotland, Northern Ireland and Wales in 1989, and subsequently up-dated twice yearly. It comprises three types of information sheet: Activity Space Data Sheets (known as A-Sheets), their supporting Activity Unit Data Sheets (known as B-Sheets) and A-Sheet component listings (known as D-Sheets).

**8.2** A-Sheets record in more detail than is described in this Note each task or activity that is performed in a particular activity space (which may be a room, space, corridor or bay) together with environmental conditions and the technical data necessary to enable the activities to be performed. Each A-Sheet also contains a list of the titles and code numbers of the relevant B-Sheets.

**8.3** B-Sheets provide narrative text and graphics to scale relating to one activity. They show equipment fitted or supplied as part of the building, and the necessary engineering terminals. There are also "component B-Sheets" which show a range of particular components rather than an activity.

**8.4** D-Sheets provide information about the total quantities of components (excluding those in Group 4 – see paragraph 1.12) extracted from all the B-Sheets selected for inclusion in an individual A-Sheet.

**8.5** Activity Data is only available in the form of magnetic media, but this may be used to generate paper copies where required.

**8.6** Further information about the use and preparation of Activity Data can be found in the 'Guide to 'A' and 'B' Activity Data Sheets and their use in Health Building Schemes' issued to Health Authorities with EL(89) MB/19 (in Wales, WHC(89)18). Health Authorities may obtain additional copies of the Guide and an explanatory video tape from NHS Estates, Room 540, Euston Tower, 286 Euston Road, London NW1 3ND.

## Activity Data applicable to this Note

**8.7** The A-Sheets recommended for the activity spaces described in this Note are either new sheets, amended ones or selected from existing sheets. A list of A-Sheet code numbers and titles is given at the end of this Chapter.

**8.8** Further Activity Data Sheets may be selected, or drawn up by project teams to their own requirements, for any services not described in the Note or included in the list. Members of project teams are advised to contact their Activity Data Co-ordinator/Welsh Office for information and advice about the selection of Activity Data, at an early planning stage.

**8.9** In order to ensure consistent and economic provision, variations from the A-Sheets recommended for the spaces covered in this Note should be considered only where it has been decided that the function of a space will differ substantially from that described.

## List of Activity Data A-Sheets

**8.10** **Note:** The Activity data A-Sheets may not carry a title identical to the activity Spaces detailed in this Note. Use of the appropriate A-Sheet code number will however, result in the correct activity space being accessed.

| Activity Space | A-Sheet Code no. | Para. no. in HBN |
|---|---|---|
| **Departmental accommodation** | | |
| *Staff areas* | | |
| Reception/Records | J0423 | 4.4 |
| | J0424 | |
| Secretarial staff | J0423 | 4.9 |
| | J0424 | |
| Seminar room – 12 persons | H0521 | 4.10 |
| – 25 persons | H0522 | |
| Staff Room – 12 rooms | H0521 | 4.11 |
| – 20 persons | H0522 | |
| Locker Room – 32 lockers | V0624 | 4.14 |
| – 52 lockers | V0625 | |
| WC/Wash | V0907 | 4.15 |
| *Patients areas* | | |
| Main waiting – 12 patients | J1133 | 4.6 |
| – 20 patients | J1134 | |
| Assessment/Quiet interview room | M0715 | 4.21 |
| Wchr. WC/Wash | V0915 | 4.16 |
| Wchr. WC/Wash (dual access) | V1206 | |
| *Utilities and stores* | | |
| Cleaner's space | Y1215 | 4.25 |
| Disposal room | Y0613 | 4.26 |
| Electrical switchgear | K0101 | 4.27 |
| **Physiotherapy section** | | |
| *Staff areas* | | |
| Superintendent physiotherapist | M0209 | 4.30 |
| Staff office – 6 persons | M0225 | 4.31 |
| – 10 persons | M0228 | |
| Staff base | T0122 | 4.41 |
| *Patients areas* | | |
| Patient's changing – 6 places | V0708 | 4.17 |
| – 10 places | V0709 | |
| Wchr. WC/Wash | V0915 | 4.16 |
| Wchr. WC/Wash (dual access) | V1206 | |
| Activity area – combined | Q0613 | 4.32 |
| – small | Q0515 | |
| – large | Q0514 | |
| Treatment – 10 cubicles | X0222 | 4.36 |
| – 14 cubicles | X0225 | 4.36 |
| – individual room | X0113 | 4.39 |
| – individual room (UVL) | X0102 | 4.39 |
| Wax and ice | X0223 | 4.40 |
| *Utilities and stores* | | |
| Storage – general | W1222 | 4.43 |
| – general | W1226 | |
| – activity area (small) | W1225 | |
| – activity area (large) | W1217 | |
| – cubicles | W1215 | |
| – linen store | G0117 | 4.22 |

| Activity Space | A-Sheet Code no. | Para. no. in HBN |
|---|---|---|
| **Hydrotherapy suite** | | |
| *Entrance* | J0129 | 4.46 |
| Staff base | | |
| Sub-waiting | | |
| Trolley/Wchr. transfer area | | |
| Trolley/Wchr. parking | | |
| Patients/Staff changing | V0710 | 4.63 |
| Showers – ambulant | V1618 | 4.65 |
| – trolley access | V1619 | |
| WC – semi-ambulant patient | V0914 | 4.66 |
| Assisted WC (dual access) | V1206 | 4.66 |
| Pool hall | Q0519 | 4.47 |
| Patient rest area | Q0520 | 4.64 |
| *Utilities and stores* | | |
| Laundry/Utility room | Q0521 | 4.67 |
| Equipment store/Cleaner's bay | W1227 | 4.68 |
| Plant rooms – pool circulation | – | 4.69 |
| – pool ventilation | | |
| **Occupational therapy section** | | |
| *Staff areas* | | |
| Head occupational therapist | M0209 | 4.70 |
| Staff office – 6 persons | M0226 | 4.71 |
| – 10 persons | M0229 | |
| *Patients areas* | | |
| Activity area – combined | Q0512 | 4.72 |
| – light | Q0516 | 4.73 |
| – heavy | Q0517 | 4.77 |
| Wchr. WC/Wash (dual access) | V1206 | 4.16 |
| ADL – bedroom | Q0122 | 4.89 |
| – bathroom/shower | Q0123 | 4.90 |
| – kitchen | Q0120 | 4.93 |
| *Utilities and stores* | | |
| Timber and metal store | W1219 | 4.82 |
| On-going work store | W1220 | 4.83 |
| Materials/Equipment store | W1221 | 4.84 |
| Community disability equipment store | W1224 | 4.85 |

| Activity Space | A-Sheet Code no. | Para. no. in HBN |
|---|---|---|
| **Speech therapy section** | | |
| *Staff areas* | | |
| Chief ST's. office | M0209 | 4.96 |
| Staff office/Individual treatment | M0227 | 4.97 |
| Staff office – 4 persons | M0230 | 4.97 |
| Viewing room | Q0513 | 4.100 |
| *Patients areas* | | |
| Individual treatment room | X0114 | 4.98 |
| Group treatment room | X0208 | 4.99 |
| *Utilities and stores* | | |
| Equipment store | Q0513 | 4.101 |
| **Essential Complementary Accommodation** | | |
| Splint preparation | X0224 | 4.19 |
| Assessment wheelchair store | W1233 | 4.86 |

| Activity Space | A-Sheet Code no. | Para. no. in HBN |
|---|---|---|
| **Optional Accommodation and Services** | | |
| Consultant's office | M0209 | 4.8 |
| Consultant's C/E room | C0216 | |
| District therapist's office | M0209 | 4.29 |
| Secretarial office – 1 secretary | M1308 | 4.8 and |
| – 2 secretaries | M1313 | 4.29 |
| Physiotherapy for ward areas | Q0518 | 4.44 |
| Occupational therapy for ward areas | Q0518 | 4.87 |
| Decentralised staff changing | | |
| – male | V0408 | 4.12 and |
| – female | V0410 | 4.62 |
| ADL – bedroom | Q0122 | 4.89 |
| – utility/laundry | Y0506 | 4.95 |
| Children's therapy area | | |
| – individual | X0115 | 4.23 |
| – group | X0116 | |
| Sub-waiting | J1206 | 4.42 and 4.102 |
| Pool counter-current unit | – | 4.61 |
| Piped oxygen & medical vacuum | – | 4.39 |

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# Bibliography

Not including detailed engineering references, which are given at the end of Chapter 6.

## Acts and Regulations


*The Chronically Sick and Disabled Persons Act,* 1970. HMSO

*The Chronically Sick and Disabled Persons* (Amendment) Act, 1976. HMSO

*The Disabled Persons Act,* 1981. HMSO

*The Disabled Persons (Services, Consultation and Representation)* Act, 1986. HMSO

*The Health and Safety at Work etc Act,* 1974. HMSO

*The NHS and Community Care Act* 1990. HMSO

The Building (Disabled People) Regulations 1987. HMSO


## Health Building Notes

(Produced by the Department of Health, Welsh Office and, from September 1990, the Department of Health and Social Services, Northern Ireland.)


1 *Buildings for the Health Service,* 1986. HMSO

2 *The Whole Hospital* (in preparation)

3 *The Design of the Hospital* (in preparation)

4 *Adult Acute Wards,* 1990. HMSO

23 *Hospital accommodation for children*, 1984. HMSO

35 *Accommodation for people with acute mental illness,* 1988. HMSO.

37 *Hospital accommodation for elderly people,* 1981. HMSO

40 *Common Activity Spaces.*
*Volume 1 – Example layouts: Common components*, 1986. HMSO
*Volume 2 – Corridors*, 1986. HMSO
*Volume 3 – Lifts and stairways,* 1989. HMSO
*Volume 4 – Designing for disabled people,* 1989. HMSO

41 *Accommodation for staff changing and storage of uniforms,* 1984. HMSO

42 *Accommodation for education and training,* 1989. HMSO

45 *External works for health buildings* (in preparation)

47 *Health records department,* 1991. HMSO

51 *Supplement 1 Miscellaneous spaces in a District General Hospital,* 1991. HMSO


## Health Technical Memoranda – Component Data Base

(Produced by the Department of Health and Welsh Office)


55 *Windows,* 1989. HMSO

56 *Partitions*, 1989. HMSO

57 *Internal glazing,* 1989. HMSO

58 *Internal doorsets,* 1989. HMSO

59 *Ironmongery*, 1989. HMSO

60 *Ceilings,* 1989. HMSO

61 *Flooring,* 1989. HMSO

62 *Demountable storage system,* 1989. HMSO

63 *Fitted storage system*, 1989. HMSO

64 *Sanitary assemblies,* 1989. HMSO

65 *Signs*, 1984. HMSO

66 *Cubicle curtain track*, 1989. HMSO

## FIRECODE

(Produced by the Department of Health and Welsh Office)

Health Technical Memoranda, numbered:

81 *Fire precautions in new hospitals,* 1987. HMSO

82 *Alarm and detection systems*, 1989. HMSO

83 *Fire safety in health care premises: general fire precautions,* 1982. HMSO

87 *Textiles and furniture,* 1989. HMSO

*Policy and principles,* 1987. HMSO
*Directory of fire documents,* 1987. HMSO

*Fire Practice Note 2 Storage of flammable liquids,* 1987. HMSO

*Nucleus Fire Precautions Recommendations,* 1989. HMSO

## Health Notices, Circulars, Letters

(Issued by the Department of Health and, where indicated, Welsh Office)

*Building Legislation Compliance Procedures*, HC(88)60/HC (FP)(88)29 (In Wales, WHC(89)20)

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*Hospital building – teaching hospital space requirements*, DS letter 65/74, DS letter 86/74 (In Wales, HSD3/57/1)

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*The National Health Service Security Manual,* issued with HN(84)26 (In Wales, WHN(85)1). National Association of Health Authorities

*Promoting non-smoking on NHS premises,* HC(85)22 (In Wales, WHC(85)31)

*Removal of Crown Immunity*, HN(90)27/LASSL(90)15 (In Wales, WHC(91)4)

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*Upgrading and adaptation of existing buildings*, WKO Letter (81)4

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*BS 5810 Code of practice for access for the disabled to buildings*, 1979. British Standards Institution

*BS 5925 Code of practice for design of buildings*, 1980. British Standards Institution

*Works Guidance Index*, published annually. DH

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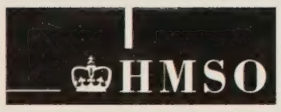


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